

**THE DEVELOPMENT OF IMPLEMENTATION
PROCESSES FOR PARTNERING IN
CONSTRUCTION**

Stuart Carmichael

Institute of Social Research

Department of Art and Design

University of Salford, Salford, UK

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CONTAINS DISKETTE

Abstract

Partnering emerged in the construction industry in the late 1980's and since then has developed into a mainstream management strategy for reducing traditional adversarialism and improving project performance. The maturation of the approach reached a milestone recently with the publication of the first partnering contract. However the approach is still in its relative infancy and a myriad of definitions exist as to what it is. (Li, Cheng & Love, 2000). It has received considerable attention from practitioners and researchers alike yet it remains an alien approach to many and is consequently difficult to plan and implement. Even the recent partnering contract has been criticised for its complexity, while others believe partnering should remain an approach represented by management style not contractual documentation.

The aim of this thesis is to develop a set of practical processes for the strategic development and implementation of partnering arrangements. It aims to develop, through the identification of best practice criteria, generic processes as well as recommend corresponding management techniques for both long term and Project Specific Partnering success. The generic processes can then be tailored to suit specific projects and business objectives.

The work represents the first stage in the development of a clear and implementable partnering management tool for the construction industry. The further development required for industrial implementation has also been identified.

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Chapter 1: Introduction

1 Overview of Research Subject

This research investigates partnering in the construction industry and identifies the key principles for effective partnering implementation. The research then identifies through case studies the degree to which such principles are undertaken and where the shortcomings are. The findings are then structured into a set of partnering implementation processes, which provide practitioners with a clear framework based on validated best practice principles. The aim of these processes is to enable partnering arrangements to be effectively established and managed early in the project management process.

The construction industry has been described as fragmented and adversarial, with numerous organisations having varied amounts of responsibility, participating on complex projects for sometimes very short periods of time. This makes the task of managing teams and individuals, maintaining quality and keeping control of costs and programme, a difficult one (Latham, 1994).

Integration between project organisations is often limited and the tight cost and time constraints inherent in the industry can often make the relationships between project contributors strained¹, (Parkinson, 1996). Conflicts, which lead to claims as well as mismatching objectives, serve to reduce the cohesiveness and effectiveness of project teams as a whole (Handy, 1993). This coupled with the task of creating a new, unique product, within tight time constraints, in variable geographic locations, has affected the UK construction industry's reputation regarding its ability to

¹ such as contractor-architect and contractor-subcontractor relationships.

complete projects to time and cost without compromising quality (Baden-Hellard, 1995).

With such constraints on all new projects, it is vital that the project team (including supplier organisations and others further down the supply chain), are as effectively integrated as possible in order to collectively find solutions to problems, as and when they arise, and to ensure the quality of design and construction processes is effectively maintained.

Since the publication of 'Trusting the Team' (Latham, 1995) the construction industry has been enthusiastic about the potential of partnering to help cure the traditional ills associated with the industry, such as conflicting aims and objectives, adversarialism and fragmentation. There have been many definitions by construction commentators but there has been considerable confusion regarding what constitutes a 'partnering' relationship.

Partnering is an imprecise term covering a range of different arrangements of varying degrees of intensity. For this reason, no single definition of the term is adequate, but all partnering arrangements share some common characteristics which are worth noting' (Lorraine, 1993).

The construction industry is not unique in its use of numerous diverse design and production disciplines, yet as the manufacturing review (Section 2.1) illustrates, other industry sectors seem to have overcome more successfully, many of the problems associated with poor integration of project teams. The review suggests successful integration consists not only of effective methods of exchanging information but requires the development of collaborative relationships between organisations that will help facilitate both communication and knowledge exchange and enhance the flexibility of the project teams.

In manufacturing sectors the partnered approach to strategic and operational management has proven to be an effective tool in enhancing the effectiveness of many business sectors, and it has been used successfully in US Naval (Schmader & Gibson, 1995) and Military (Weston & Gibson, 1993) operations. In manufacturing the adoption of partnering principles has had a profound effect on how individual companies and industry wide sectors have developed. Partnering in manufacturing has been described as:

'A working relationship between a customer and a manufacturer for the development of a new product by performing co-ordinated development activities, to produce superior mutual outcomes with expected reciprocity over time'. The customer helps the developing company by actively participating in the development process (Lamming, 1993).

Partnering seeks to improve both the product and the process of manufacture in order to achieve greater competitiveness. The importance of alliances and other forms of collaboration is seen as central to the effective development of new products. (Harrigan, 1988; Jassawalla & Sashittal, 1998; Khanna, Ghulati. & Nohria, 1998; Koot, 1988). Partnering strategies are normally developed in order to facilitate innovation and focus upon the integration of key disciplines such as Research and Development (R&D) and design and production. This is often accompanied by the development of a rigid management information system, which is used to monitor progress and performance on an ongoing basis through the utilisation of such techniques as benchmarking and open book policies (WG12).

The automotive sector is often used as an example of an industry that has overcome, to a significant extent, the problems of inter-organisational

fragmentation (Lamming, 1993). Its use of similar design and production professionals, as well as a development process consisting of the design and management of a large number of sub-components, culminating in the production of a complex final product, make it logical to compare it with the current UK construction industry. It is the improved relationships between predominantly the suppliers of these sub-components and the vehicle assemblers that have principally been responsible for the improved efficiency of both individual companies and the automotive sector as a whole.

“In the automotive industry where a large number of parts are assembled and many suppliers are involved, the role of those suppliers is crucially important in developing competitive advantage” (Biemens, 1992).

1.1 General Definitions: What is Partnering?

The concept of partnering in its broadest context covers a wide and diverse range of relationships between potentially numerous organisations. The term partnering is often used at an organisational level and in a non-specific way. For example partnering can be said to mean:

“A constructive dialogue between business partners to communicate expectations and results” (DTI, 1991).

Although this says little in the way of a new management methodology it is describing a relationship in which considerable commitment must exist. Partners therefore help each other for the mutual benefit of both. It is this mutual commitment that has historically been so difficult to achieve in construction, between organisations and individuals that often do not have an immediate or inherent mutual interest in working together.

There are varying opinions by those in the industry regarding what constitutes partnering. Many argue that partnering is simply a new word for being reasonable, conscientious or professional (Larson, 1995) or returning to 'old fashioned' ways of doing business (ADOT) Warne, 1993). Others see partnering as a variant of Total Quality Management (TQM), (Wanner, 1994) or as a form of strategic planning (Mosley et al, 1993).

The immaturity of formal partnering arrangements in construction compound further the problems associated with their effective implementation and the measurement of any attributable benefits. According to Lamming (1993), in a committed partnering relationship the two parties need to:

Establish a relationship of trust in order to focus on collaborating, to improve the quality and reduce the basic cost of the end product or service, for which they are jointly responsible. The establishment of trust is important as it indicates that such a relationship must be built up over a period of time, and should consist of 'a complex mixture of factors which builds to an effective and supportive communication channel, without which the necessary collaboration on process and product development could not be achieved (Lamming, 1993)'.

It is therefore perhaps evident why the term partnering is used by so many different industry sectors and why it has the possibility of being implemented in numerous business relationships, because its underlying message is pertinent to almost any type of relationship where benefits can be gained from mutual, medium or long term collaboration.

1.2 Potential for Change in the Construction Industry

The construction industry over the last few years has become interested in utilising the partnering approach in order to help improve the overall performance of projects. Although there are examples of partnering being successfully used in civil engineering projects (Brown, 1994; Bates, 1994), research shows that partnering in construction, especially building construction, is at present less widely adopted and understood and on the whole less refined than its manufacturing counterpart which tends to be more long term. (Bennett & Jayes, 1995; Cooper et al 1996). The question as to what extent partnering can successfully improve the performance of both individual companies and the construction industry as a whole remains largely unanswered at present. It is still viewed somewhat as a panacea, and the successful implementation of partnering in manufacturing has created considerable and perhaps over optimism in construction disciplines as to its potential. There are many examples of successful collaboration between organisations in construction. However the potential of a structured partnering approach to change the attitudes of organisations and the culture of the industry as fundamentally as in manufacturing is less clear.

Since the outset of this research, the partnering contract entitled PPC 2000 (Project Partnering Contract) developed by the ACA (Association of Consultant Architects) and Trowers & Hamlin solicitors has been introduced. This will probably accelerate its uptake within the industry. However, whether partnering is adopted as a mainstream management approach for the future or whether it is merely a passing fad largely depends on the ability of people to implement effectively and demonstrate clearly defined performance improvements. The main issue of the thesis is to consider how practitioners can achieve this objective.

1.3 The Research Thesis and its Aims

In order for stakeholders to be able to improve the performance of their projects by utilising partnering it is hypothesised that they must adopt a common set of key partnering principles: It is further hypothesised that these principles can be utilised to provide a framework for a set of generic partnering processes which can be used to help implement partnering at both a strategic and project specific level.

In order to investigate the validity of these hypotheses, the thesis will focus on identifying the key principles and developing and validating the generic partnering processes. The main objectives of the thesis are therefore as follows:

1. To identify key criteria for effective partnering in other industry sectors where partnering has been successfully used.
2. To analyse the design and operation of partnering arrangements in construction, and to identify the criteria upon which successful partnering depends.
3. To design and validate a set of long term and Project Specific Partnering processes to support development and implementation of formal partnering arrangements.

The thesis initially identifies best practice principles from other industry sectors such as the automotive sector where rigorous partnering principles have been shown to provide significant performance improvements. An investigation of these principles is then undertaken within a construction context to explore whether they are relevant according to notable texts. A survey is then undertaken with key contractors to ascertain their attitudes and experiences with reference to the key principles and identify further criteria, which they feel are important. A series of initial case studies is

then undertaken to enable a revised common set of principles to be developed.

The main case studies then investigate how the companies performed against these key-partnering principles. An analysis and comparison Chapter assesses each case in relation to one another and the resultant analysis provides information on which to base the initial partnering model and corresponding processes.

A final case study, which involves a 'model' partnering framework arrangement is then used to finalise the processes and a workshop event with key project participants from both client and contractor organisations is used to validate them.

A more detailed explanation of the research methodology is provided in Chapter 3.

1.4 Structure of Thesis

The thesis is structured into nine Chapters. At the beginning of each Chapter a simple *Chapter Map* is provided which lists the main topics covered in the Chapter. A summary section is provided, which summarises the learning from each Chapter. The summary of the research Sections present the key partnering principles identified from the specific research undertaken and the principles recommended by the practitioners involved with the project under investigation. These summaries also identify criteria, which have been shown to be important, but which were not effectively considered by the partnering on the specific project. These have been listed under the heading of caution points.

The purpose and contents of each Chapter are briefly discussed below.

1.4.1 Chapter Two

Chapter Two constitutes the main literature review providing a broad investigation into the history of partnering. An assessment of partnering in manufacturing is provided which predominantly concentrates on partnering arrangements and approaches in the automotive sector providing an account of how collaborative working and partnering principles helped develop the industry. The Chapter then focuses on construction specific partnering, the general attitudes of practitioners and academics toward it and how it is being implemented in the modern industry. A key element of partnering is the management of risk, and this aspect in a construction context is discussed leading on to an assessment of how partnering can potentially benefit construction according to the literature. The Chapter also provides a review of specific aspects of the construction industry, which might act as potential barriers to effective partnering implementation and briefly considers the importance of team culture and conflict.

1.4.2 Chapter Three

Chapter three describes the research methodology for the thesis, providing both general research and data collection processes, which have been designed and utilised for the research study.

1.4.3 Chapter Four

Chapter Four presents the initial research undertaken which was used to develop an initial framework for the development of the key partnering principles and the intended partnering processes. This initial *scoping* research consisted of three mini case studies, one from the automotive industry, one from the technology industry and the other from the construction industry. A summary of each case is provided along with the key summary and caution points for each. Chapter Four also describes the contractor survey, which was undertaken to identify attitudes and

experiences of different construction disciplines, regarding partnering and its constituent procedures as identified from the literature review. The results of this survey are presented along with a discussion section. A summary of the benefits identified in partnering projects compared to non-partnering projects, along with a set of caution points is also provided.

1.4.4 Chapter Five

Chapter Five presents the three Bovis case studies examining the collaboration between Bovis and three notable clients including Northern Foods, Peel Holdings and Marks and Spencer. Each case study provides a review and assessment of the collaborative relationship and its effectiveness, ascertains the principle lessons learnt and identifies a set of key principles and caution points. A brief comparison section is provided at the end of the Chapter, which discusses the three cases collectively and draws out common lessons. A set of key principles drawn from all three cases is also provided. The Bovis cases are reviewed and discussed further in Section 8.

1.4.5 Chapter Six

Chapter Six draws together the main lessons learnt from the literature review, mini cases and construction case studies. It provides an analysis of the results with the aim of further refining the identified partnering procedures into a set of key principles, which can be used to develop the partnering processes. The Chapter also provides a summary of the key management procedures required to effectively implement the key principles. The key principles identified and their relationships have been represented by a Partnering Lifecycle Model, which describes both high level strategic, and project specific processes.

1.4.6 Chapter Seven

Chapter Seven presents the main Amec-BAA case study, which investigates a widely publicised ‘model’ partnering arrangement. This more rigorous and formal approach to partnering was client driven through a five-year Framework Agreement developed by BAA and the case study investigates the method and the effectiveness of the arrangement. Evidence of the utilisation of the key principles identified in Chapter Six is also considered and further key lessons and principles identified by the study are provided.

1.4.7 Chapter Eight

This Chapter aims to submit the findings and results of the investigative research in accordance with the main aims and objectives of the thesis. Chapter Eight presents the key lessons learnt from the case studies and surveys regarding general criteria for effective partnering, common deficiencies with partnering and proposed methods for overcoming them. The Chapter recommends a best practice approach to partnering resulting from the research and presents the Long Term Strategic and Project Specific Partnering processes.

1.4.8 Chapter Nine

Chapter Nine provides a summary of the research undertaken and principle research findings which culminated in the implementation processes. It reviews the main aims, objectives and hypotheses of the thesis and discusses the extent to which these were achieved and supported. A number of conclusions are also made with respect to the key principles required for successful partnering identified through the research.

Finally the Chapter concludes by noting the principle areas where the researcher believes further research work is required.

Chapter 2: Review of Literature

2 Introduction

This Chapter begins with an overview of partnering precedence in manufacturing focusing largely on the changes that occurred to the automotive industry over the last thirty years, in overcoming fragmentation and adversarialism through the use of collaborative management techniques.

The second section reviews construction-partnering literature and includes a section, which highlights the particular peculiarities of construction that can act as a barrier to the effective implementation of such partnering procedures and techniques. In both sections the key principles and criteria for successful partnering implementation are illustrated. The Chapter Map for this section is illustrated below.

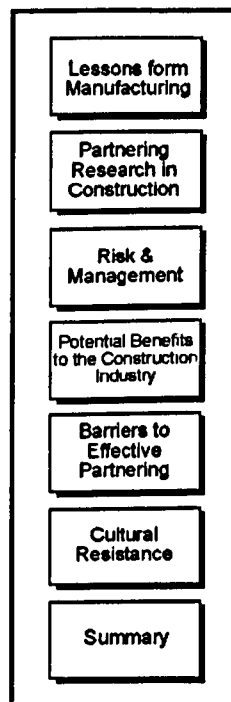


Figure 1: Literature review chapter map

2.1 Lessons From Manufacturing

Before examining the specifics of the construction industry in detail, the approach to partnering in manufacturing requires investigation in order to ascertain existing best practice techniques and methodologies for the development and implementation of partnering as to identify any discovered pitfalls of its use.

Most industry sectors are progressively becoming more competitive with customers increasingly making higher demands upon suppliers and their products. Rapidly changing market conditions concerning competitive structure, product and production complexity and length of product life cycles have culminated in a set of changing circumstances that seriously affect the way in which many companies do business (Biemans, 1992).

Inevitably, in response to these tightening constraints, new management philosophies are continually being proposed and over recent years methodologies concerning 'inter-organisational collaboration', now frequently referred to as 'partnering' or 'strategic alliancing', have received a great deal of attention (Hamel, Doz. & Prahalad, 1989; Ciborra, 1991; Hakansson & Sharma, 1996; Perks, 1993; Perlmutter, 1986; Ohmae, 1989; Westney, 1988). Because organisations have historically collaborated with others in some way or another, there is a plethora of collaborative strategies and relationship types which have been implemented and are well documented such as co-makership, co-design relationship, strategic alliance, network, hybrid organisation, virtual organisation, concurrent engineering, parallel product development and others.

Partnering is a term frequently used generally and with reference to a huge and diverse number of industries, which have fundamentally

different attributes. It is therefore the aim of this review to help to define 'partnering' by way of reference to other contributors definitions and research. The automotive industry will be used as the major sector for comparison due to the consensus of opinion that collaboration has played an important role in the industry's streamlining (Lamming 1993). Research from other manufacturing sectors such as electronics and telecommunications will also be briefly investigated for comparison. The review will attempt to assess whether 'partnering' constitutes a 'new term for old ideas' or whether there is significant evidence to suggest that this is a valid management approach. The validity and reasons for the success of partnering within different industry types will also be identified and compared. The findings will form the basis for a comparative study with the construction industry.

2.1.1 Types of Partnering in Manufacturing

Because partnering is not a hard and fast rule, it is somewhat difficult to categorise all the different types of relationship that can be developed through its implementation. However several distinct types of partnering have been identified based on the nature of the companies and their proposed form of collaboration. The DTI states that:

"The term strategic partnering encompasses a variety of business development mechanisms, including equity joint ventures, licensing and long term trade agreements which together represent a powerful set of business tools, which have made a major contribution to the growth of many of the worlds most successful manufacturing companies".
(DTI/SMMT, 1992)

Furthermore the DTI suggests that partnership can be broadly based into two categories, these being 'equity-based' or 'non-equity based'.

Partnering relationships can transform from one type to another, for example as a relationship becomes more mature and the mutual interdependence becomes greater the partnership might move from a non-equity to an equity joint venture or strategic investment. The following definitions were discussed in the DTI's 1992 Document entitled 'The Role of Strategic Partnerships in the UK Automotive Components Sector' and are important as they helped clarify often-changeable terminology used to describe various types of collaborative relationships.

2.1.2 Equity Based Partnerships

Equity-based alliances require either the formation of a new company or the participation of one company in the ownership of another. The four main types of equity-based partnerships are as follows:

2.1.2.1 New Equity Joint Ventures

Two or more companies establish a separate, jointly owned start up operation, normally accessing a new market in which neither is currently involved.

2.1.2.2 Partial Mergers

Companies merge together competing parts of there companies either departments or subsidiaries. Usually described as a joint venture although different from the above. The aim is to rationalise business in an overcrowded sector or to gain economies of scale.

2.1.2.3 Strategic Investments

One company purchases a significant minority shareholding of another for such reasons as: to influence board policy, to facilitate greater collaboration, to safeguard strategic trading relationships, to benefit from helping the investing company with a new line of business, stepping stone to acquisition, etc.

2.1.2.4 Corporate Venturing

Large companies take minority equity positions in small entrepreneurial businesses in order to gain a “window” on the emerging technologies and markets of relevance to their business.

2.1.3 Non-Equity-based Partnerships

In non-equity-based alliances collaboration is usually linked to specific projects or products and to defined time periods. There are four main types of non-equity-based partnerships (DTI/SMMT, 1992) consisting of: Licences, Technology Assistance Agreements, Collaborative R&D, and Marketing and Distribution (OEM) agreements.

2.1.3.1 Marketing and Distribution (OEM) Agreements

A company agrees to provide a product manufactured in its own factories, for resale by a partner under the partners own brand. By choosing a partner with a strong brand, good customer relationships and established marketing channels, the manufacturer gains access to the target market faster.

The ways in which partnering concepts can be beneficial to marketing strategy have received considerable attention. Otherwise known as Relationship Marketing (RM) it is also sometimes referred to as Micro-Marketing, database marketing, one-to-one marketing, wrap-around marketing, symbiotic marketing and interactive marketing. It is also known

as customer partner marketing. At the heart of RM practice there are three types of relationship company-intermediary, company-consumer and company employee (Buttle, 1996). These relationships are now being described in new ways for example customers are now associates or partners enmeshed in alliances or partnerships.

RM theory proposes four main types of partnerships these being as follows (Buttle, 1996):

Supplier Partnerships	Lateral Partnerships	Internal Partnerships	Buyer Partnerships
Goods suppliers	Competitors	Business units	Intermediate-customers
Services suppliers	Non-profit organisations	Employees Functional - departments	Ultimate customers

Table 1: Relationship Marketing: four types of partnering
(from Buttle, 1996)

Examination of success and performance in relationship marketing in different industry sectors will provide useful data on the effectiveness of such policies and the validity of such principles when used in the construction environment.

2.1.4 Partnering Precedence in the Automotive Industry

The automotive industry constitutes the focus for the manufacturing review due to the benefits seen in the industry being identifiable as a consequence of improved relationships and collaborative management methodologies. (Hyun, 1994; Lamming, 1993). Other industry sectors have also experienced productivity improvements through the adoption of similar techniques, (Perks, 1993; Hamel, Doz, & Prahalad, 1989; Ciborra 1991), however the automotive industry has received much attention due

to the degree of change that has been introduced to a complex industry over a relatively short period of time.

Concepts akin to partnering have been identified as critical factors in the effective transformation of the automotive industry from mass production through to lean production, with resultant improvements in quality and value of products (Lamming, 1993). What is worthy of note at this point is that the term is used to describe a number of management methodologies that have been previously implemented and would not have been referred to as partnering at the time of their application.

To fully understand the development of such collaborative working practices it is important to identify the major forces of change in the industry that led to the adoption of such new techniques. This will help to illustrate how industry wide changes in inter-organisational relationships are inextricably linked to macro changes in the industry environment, such as economics, competition, political instability and others.

2.1.5 Historical Development of the Automotive Industry

Lamming (1993) identifies the predominant factors that led to change and consequential improvements in cost and value in the automotive industry over the last thirty years. It can be seen that in the early 1970's, in what Lamming describes as the "traditional phase" the industry was buoyant and still utilised, inherently, a system of mass production. Due to the fact that there was no shortage of business, competition was, although closed, conducted in a reasonably friendly manner, and assemblers and customers normally had a reasonably stable relationship. Business was awarded by competitive tender and competition for suppliers was defined by the buyer, which as Lamming states, *"tended to discourage innovation from the supplier"*. With hindsight the buyer and supplier can be seen to have existed

in two separate industries, which interacted with each other only to trade. The buyer was focused on finding cheaper piece prices and interested in obtaining short-term advantages whilst the supplier needed to extract as much from the relationship whilst it had the chance. Consequently information and data exchange between the two was limited and the increases in productivity over this time have been put down to increases in existing business rather than innovative new product development.

These working practices continued until the system was given a severe jolt in the mid 1970s. A fear for survival swept through the industry due to competition as well as macroeconomic factors such as the oil crisis and labour management problems. This resulted in what Lamming describes as the 'stress' model phase. The first step in ensuring survival was to reduce unit costs. Suppliers were squeezed, the rational approach towards improvement in competitive position broke down and the resultant marginal costing led to self-destructive pricing and inevitably to insolvency's. The stress model phase constituted a crisis for the automotive industry however it can be identified as the period where the most notable changes to the industry occurred or perhaps more pertinently, 'were forced onto the industry'. As a result features which are now considered crucial to effective design and production were developed including the opening of information channels, the acceptance of working to short notice requirements, the realisation of the importance of quality control, and the ability to work under pressure (Learning From Japan, DTI, 1995). However because the industry was forced into making such developments many of these changes were involuntary and the implementation was by today's standards inefficient.

At the end of the stress model phase it was realised that relationships were of importance. This coupled with the fact that the crisis period had significantly reduced the number of competitors, led to collaboration

between European component suppliers. Systems methodology was suggested which led to suppliers undertaking supply of extended technologies through collaboration. By the early 1980's quality performance was being considered alongside price in sourcing decisions. Once a supplier had been approved they had to satisfy stringent supply and price requirements placed on them by the assembler. This constituted the introduction of western Just In Time (JIT) methods, albeit in a somewhat unrefined form where it was considered more of a concern about stock levels and delivery cycles rather than the principle of motivation, quality improvement and elimination of waste. Furthermore throughout this phase working pressure was relaxed which is against the methodologies of the Japanese who work to a philosophy of continuous improvement. However the resolved model phase enlightened the industry as to the possible benefits effective collaboration and relationship building could have (Lamming, 1993).

2.1.6 The Japanese Approach

Over the last ten years a refinement of the resolved model (defined as the Japanese or partnering model) has occurred, fuelled predominantly by an attempt of the western automotive industries to adopt proven measure for success as implemented by the Japanese over a significant period of time. The Japanese industry has developed in relative isolation from the other countries and has adhered to rigid management proposals and working practices since the traditional phase. Indeed Kiichiro Toyoda² as far back as 1940, suggested the following important factors in Japanese subcontracting policy:

- Assembler controls the relationship

² In Lamming, 1993

- Recognition of the specialist abilities of the supplier as crucially important
- Necessity to have a form of shared capital / financial tie to secure a relationship

Driven by a national determinism to achieve and resurrect not only the automotive industry but also the entire national economy, the strategies had been stringently followed by industrialists from a culture collectively bound together by this underlying objective. The success of the Japanese approach had been noted for sometime and lessons were trying to be learnt from it. Over time features from the Japanese approach were transferred over to western industries, for example the importance of supplier relationships was recognised, supplier involvement was increasingly pushed forward to an earlier stage, and importantly R&D was becoming of paramount importance to both buyer and supplier. Furthermore assemblers over this period began to control more shares in supplier organisations and this approach has progressively grown over the last decade (Learning From Japan, DTI, 1995).

2.1.7 The Automotive Industry at Present

The automotive industry continues to refine JIT and Quality Assurance (QA) methods and policies in pursuit of effective lean supply and production as described by Lamming (1993). Indeed the thrust of education in the automotive industry over recent years has advocated the idea of 'learning from Japan'. To achieve, they will need to see themselves as having the potential to become global players and must effectively provide the following services (DTI/SMMT, 1992)

- Research and development

- Management of subcontractors
- True just-in-time supply
- Customer dedicated staff
- Responsibility for warranty

When embracing such principles the suppliers are all but forced into adhering to the requirements of the assemblers if they wish to remain in the market. However there are distinct benefits afforded to them if they successfully comply. Some of the most significant reasons for entering into such partnership agreements are as follows:

- to gain access to products and technology
- to gain access to customers and geographic markets
- to share costs and risks
- as an exit strategy from a difficult market
- as a mechanism for learning new skills

(DTI/SMMT, 1992)

It is worthy of note however that partnering is just one of a number of techniques that have been successfully implemented by the Japanese and have been adopted by Western companies especially in the automotive sector. The Learning from Japan Initiative was set up with the intent of improving the supply chain in the UK automotive sector through greater recognition of second and third suppliers. It identified several components of success, which have been accepted as key factors in improving efficiency. These are:

- Strategy deployment
matching actions to corporate goals
- Process improvement

efficient processes by elimination of waste

- Problem solving

Identification and elimination causes of root problems

- Supplier programmes

becoming part of a world-class supply chain

- New product development

partnership, project management and process flexibility

- Team working

design work around multiple skills

Partnering is listed as being a factor of new product development although the sharing of knowledge and resources that can occur through successful partnering strategies could potentially support all of the above techniques. However other techniques can potentially be implemented just as effectively in non-partnering organisations. Concepts for improvement could be implemented just as effectively outside a partnership so long as the organisation had the knowledge and resources necessary to achieve them (indicating a larger or more experienced company). The following concepts have been successfully implemented in Japan and the equivalent term is shown (Learning From Japan, DTI, 1995).

5Ss: Organisation, neatness, cleaning, standardisation, discipline (from 5 Japanese words).

- *Cell manufacture* : grouping of machines / workstations controlled by a team
- *Heijunka*: intelligent distribution of work
- *SPC*: Statistical process controlled
- *Visual management*: Localised information centres displaying performance targets

- *Standard operations*: repeatable, stable work processes
- *Skill matrices*: Visual record of teams ability to work and to improve the standard operation
- *Kaizen*: Promotion of improvements on a continuing basis
- *Kanban*: Use of cards or signals to pull work through the production sequence
- *PPM*: Quality measured by number of defective parts per million
- *Poka yoke*: Fool proofing to prevent errors, misalignments or missing parts

Partnering is therefore not a universal solution and companies must implement new techniques in many areas to improve productivity. Consequently it is important to be able to distinguish between partnering success and other components of success when assessing the validity of a collaborative strategy.

2.1.8 Measuring Partnering Success

Bstieler (1995) identifies factors that can be used to separate successful from failed projects and developed several main measures of project performance and measures of perceived partnership success with which the survey could be conducted. These were categorised as follows:

- Commercial success/failure
rated profitability, return on investment and degree to which company objectives met with regard to sales objectives and budgeted costs.
- Timely success / failure
speed & time efficiency project undertaken and how closely project schedule was followed.
- Window of opportunity
degree of technological success

- Partnership success

degree to which partnership met expectations of manufacturer.

Willingness to enter future partnerships with customer partner.

External effects

Degree to which reputation/attractiveness enhanced in market place.

The above measures of success/failure were seen to be strongly influenced by the following factors:

- Development of a superior new product
- The quality of the development process
- The organisation of the project
- Top management commitment
- Synergy with existing resources
- External environmental factors

The issue of measuring performance of partnering is important in the monitoring and controlling of the strategic partnership. There is little point in having such a collaborative relationship if the benefits and / or failures cannot be identified and it would be impossible to adapt the relationships without such information.

2.1.9 Strategies for Partnering in Automotive Manufacturing

Because automotive manufacturing can be seen as an experienced sector regarding partnering concepts, the current proposed partnering strategies will be reiterated as these proposals offer the most comprehensive and developed methodologies for planning and implementing such collaborative policies.

Partnering at its most simple level could be said to be a state of mind, a willingness and motivation from the parties to attain mutually agreed goals.

'It is a way of doing business, a management philosophy that emphasises an environment of trust, teamwork, and co-operation among various parties and groups of parties' (Freeman, 1991).

However as Lamming (1993) states these relationships should not be seen as cosy one-to-one affairs. Partnering is notoriously difficult to implement and a high proportion fail to deliver the benefits anticipated or result in one partner gaining much more than another. (SMMT/DTI, 1991).

For successful implementation of the partnering philosophy, strategic planning is crucially important. Partnerships are a tool and not an end in themselves and this tool can only be used effectively if the companies involved have a clear view of their objectives and how these are to be realised. Therefore companies must formulate a clear strategic view of their future in the changing industry environment with respect to their positioning and the role they intend to play. Possible partnerships must be examined against these overall objectives to assess how they contribute to bringing in new skills and resources and to exploiting new opportunities (SMMT/DTI, 1991)

Partnerships can be utilised for a variety of different purposes from short term temporary fixes as a permanent solution or as a vehicle towards acquiring new skills with the ultimate aim of entering new markets without, necessarily partnership support (Lamming, 1993). At present in

the UK automotive industry most component companies are lacking in the skills as well as the resources necessary for the establishment of an international market presence and to attain levels of revenue to enable them to invest in technology. Strategic partnerships offer a route for the acquisition of these criteria and others, which are both cheaper and quicker than more traditional methods such as acquisitions, mergers and organic development.

The DTI proposes a three-stage strategic development programme consisting of survival, bootstrapping and expansion. The survival stage is based on the prerequisite that the company must keep hold of its present position by meeting customers' basic needs. Bootstrapping involves gaining knowledge and experience from customers and partners and utilising this to improve internal performance. The expansion stage represents the application of new skills into product development and geographic markets. Particular forms of partnering are applicable to each of these stages (Learning From Japan, DTI, 1995).

The DTI in Learning From Japan, further suggests a set of guidance rules for the planning of any strategic partnership. These consist of:

- Planning:

The establishment of clear objectives, and identifying means of achieving them.

- Balancing of trust and self interest:

Making objectives known, assurance that partner can help satisfy these (and vice-versa).

Establishment of good communication and personal relationships.

- Anticipation of conflicts:

Identifying areas of conflict in advance.

- Establishment of clear leadership:

Power afforded to leaders chosen on merit.(rewards tied to success of partnership)

- Flexibility:

Foresight to be ready to alter agreements as circumstances change

- Accommodation of cultural differences:

Understanding of management styles.

- Orchestration of technology transfer:

Recognition of organisational problems, identifying a commercial sponsor, creation of receptor groups and the building of transfer mechanisms into plan.

- Learning from partners strengths

2.1.10 Success of Contemporary Strategic Partnering Policies

It can be seen that the automotive industry has successfully applied a variety of strategic partnering policies since the beginning of the resolved phase and the methodology is being further developed at present. The collaborative relationships are predominantly between assembler and supplier in order to improve the quality and value of products through the streamlining of the design, development and production processes. Furthermore it has been illustrated that the industry has had change forced upon it, to a significant extent, by macroeconomic pressure and increased competition from Japan.

Assemblers were instrumental in adopting collaborative techniques from Japan (where success levels have been high) in order to cope more effectively with increasing Japanese competition and its inevitable expansion. However can such philosophies and methodologies be successfully adopted, transferred and applied to other industry sectors and types, considering that many have inherently different cultures, markets and structures and organisations with different ideologies, motivations

and experiences. In order to investigate this, the success of partnering strategies in other industry sectors will be analysed.

2.1.11 Recent Primary Research Findings

The CBI in conjunction with the DTI have, since 1991, worked as a joint Partnership Sourcing task force which has conducted annual surveys to monitor the development of and the implementation of partnership sourcing across British Industry.

Partnership sourcing is defined as;

'a total commitment by customers and suppliers, regardless of size, to a long term, relationship, based on agreed objectives to strive for world class capability and competitiveness' (Partnership Sourcing Ltd, 1992).

Furthermore the proposed key objectives of partnership sourcing are:

- to minimise the total value chain cost (not just unit cost), and improve quality, through partner development and joint problem solving
- to ensure continuous improvement, through equal sharing of technical and cost information
- to ensure information exchange and efficiency through long term commitment, inter-organisational exchanges and frequent communication

400 companies took part in the 1995 survey, which was not confined to one industry but was representative of nearly all business sectors. In general terms the 1995 survey found the following:

- More than 80% of respondents believe Partnership Sourcing will have a crucial impact on competitiveness
- More than 70% of companies now working in partnerships
- 75% of partnerships in operation for more than two years
- 90% rate their partnerships to be a success
- Average numbers of partners is below 10
- Partnering works best when carefully tailored to the needs of the companies and the area where it is applied.
- The top three benefits are reduced cost, taking advantage of partner's expertise, and increased quality of products and services.
- In a high proportion of partnerships (most often operated in contractual frameworks) commitment has not yet become tangible although signs suggest this is forthcoming.

Although the survey was of a reasonably general nature it was also discovered that the use of partnering is expanding out from the original areas of application being in the supply or purchase of parts, components and assemblies into new areas such as for the purchase and supply of capital equipment, plant and facilities as well as services.

Other results from the survey show that over 80% of companies use partnerships for purchasing and half of these also have supply partnerships with their customers. This majority shows that at present partnerships are not perceived the same by buyer and supplier. Furthermore it was revealed that some buyers describe their relationship as partnership yet the supplier does not always see it in this way. This suggests that there is a strong possibility of power imbalance in the relationship, which questions how rigorously the partnering philosophy is being implemented. This is just one of a number of possible pitfalls that can be encountered in partnering strategies which will be explored later. The

DTI/CBI survey also revealed interesting information concerning the formalisation of partnering relationships. Most partnering relationships were formalised in some way even though it was recognised that trust was an important factor. The evidence showed that long term contracts or 'framework' agreements were the most common procedure although there is an increasing level of joint ownership, suggesting improved trust and commitment between partners.

Finally it was revealed that there is a move away from single sourcing towards a more trusting relationship where target experience, curve pricing and open book accounting are utilised. It is however debatable whether the buyer needs this level of control although it is poignant to point out that the Japanese work on these principles.

BUYER	SUPPLIER
Reduction in complexity	Buyer assistance
Supply assurance	Influence on buyers future- decision
Contract predictability	Inside information on buyers decisions
Negotiated price reductions	Information regarding competitors
Learning from partner	Firm is gatekeeper for competitors-
Fair pricing assurance	More stable workforce
Improved quality	Improved R&D effectiveness
Reduced assembly, labour & manufacturing	Greater Contract predictability

Table 2: Advantages in partnering for buyers and suppliers
(DTI, 1991)

The above research provides a picture of most companies working in partnering relationships (in some form or another) with the majority believing that the collaboration was successful and effective. Although problems with the relationships were identified, 90% of all respondents rated them a success. The key benefits experienced by participants in the survey are illustrated in Table 2. However, is this giving a thoroughly

accurate picture of the current situation in industry? The benefits for example might favour one partner more than the other and it is difficult to see the degree to which the organisations benefited as well as the size of problems encountered. What is perhaps required is more definitive method for measuring success and failure.

Furthermore, due to the fact that partnering is inherently about developing relationships and trust by collaboration over a period of time, in the pursuit of mutually understood objectives, it is likely that the outcome will be more fruitful in the majority of situations to which such relationship building is applied, than in situations without such collaboration, due to the improvements in primarily communication and data exchange that are yielded by such partnering philosophies.

“Projects done in customer partnerships compared to projects without active customer involvement have better project outcomes and overall performance” (Bstieler, 1995).

Therefore there are a multitude of arguments, which can be used in support of partnering strategies reporting on the success of new products, the enhancement of information quality about customer needs and problems, reduction in development times and costs, and the increased acceptability of the product in the market place.

Several hurdles and obstacles have however been identified and it is therefore worth further investigation of the evidence that suggests partnering does not always result in superior mutual outcomes as many proponents suggest. In this way the reliability of adopting partnering approaches can be ascertained more clearly and some of the complexities

in applying such methodologies can be identified. This will provide a useful set of criteria for comparison with the construction industry and its associated systems, culture and ideologies.

2.1.12 The Disadvantages and Pitfalls of Partnering

Although the vast majority of commentators on partnering advocate it and discuss the variety of benefits that can be gained through its implementation there are those who suggest that in the present environment, partnerships are not necessarily a certain way of ensuring improvements in product development and that there are numerous pitfalls in such arrangements. Generally the impression among buyers and suppliers is that manufacturing firms frequently move into an advantageous position in contrast to the suppliers who more frequently face disadvantages. However there is evidence to suggest that both parties stand to gain and, importantly lose, something.

The problems today do not rest with the difficulties in obtaining information but in processing, evaluating and converting it into useful knowledge about how to design, develop, manufacture and sell new products (Freeman, 1991). When a manufacturer and supplier expect to benefit from collaboration the firms will often enter into a partnership in order to exchange resources (usually technical production know how / capabilities). Partners can become enamoured with new concepts and fail to test them effectively, to see if they are actually required in the market place and / or whether the customer can get full usefulness of the innovation (Afuah & Bahram, 1995). Customer involvement in new product development can lead to the breaking down of account relationships, negative publicity through early dissemination of test results as well as generate inaccurate feedback (Dolan & Matthews, 1993).

Also co-operative sub-contractors can end up being treated as nothing more than a subcontractor by key organisations (Johne, 1994). There is often confusion and uncertainty concerning the timing and intensity of user involvement, their ability and willingness to provide the right kind of knowledge and the nature and extent of knowledge, which is to be embodied (Leonard-Barton, 1995). Table 3 lists some main potential pitfalls as discussed by the main commentators.

BUYER	SUPPLIER
More dependence on supplier	Sharing of cost info
Less supplier competition	Take on design/product warranty
Increased co-ordination costs	Pressure to improve efficiency
More support required for supplier	Less autonomy
Different reward structures	Higher communication costs
Less personnel mobility	Less personnel mobility
New styles of negotiation	Risk of breakdown in relationship
Loss of direct contact with secondary	Used for short term gain only
Less immediate comparative data	

Table 3: Pitfalls of partnering for buyers & suppliers

2.1.13 Evidence of Disadvantages in Partnering

Bstieler (1995) conducted an extensive survey based on 57 electrical / electronic projects where empirical data was collected and analysed in order to investigate if partnering (customer partnerships) would be beneficial and if so to what extent.

The results of the Bstieler (1995) survey can be summarised as follows:

- Customer partnerships are not an easy solution for improving new product development efforts.

- There are possible additional costs of partnering, which should be considered (e.g. managing additional complexities of the co-operative relationship).
- Projects done in partnerships with customers can result in better technical outcomes and may open up new markets.
- Innovative products developed via customer partnerships seem to create great technical success and open up new windows of opportunity for product and markets. However this can have pitfalls such as inefficiencies in time and development budgets.
- For partnering projects based on innovation, it is necessary to balance financial success and time/budget efficiency on one side and technical success and opening windows of opportunity on the other.
- There is little evidence to suggest any specific profiles for projects that lend themselves to customer partnering and which promise success.

Bstieler (1995) concludes that there is little to support the premise that partnering projects will perform better than non-partnering projects regarding aspects of financial performance, time efficiency and windows of opportunity. Furthermore, he suggests the high levels of success regarding innovation of both product and process, which are expected in partnering projects (and indeed have frequently been shown to exist in automotive collaboration), were not as apparent as might be expected. In the partnering projects, projects with a high level of innovation content did badly in terms of time and budget efficiency (i.e. worse than non-partnered projects), however they did better concerning technical success and windows of opportunity.

These results constitute considerably negative findings on customer partnerships but how do these compare with other research findings? In

the 1993 survey on collaboration involving organisations from the telecommunications sector (Leverick & Littler, 1996) it was found that respondents (with varying degrees of experience in partnering) also believed that there were problems associated with partnering strategies. For example:

- 51% believed that such an arrangement makes the development of a product more costly, which is in agreement with Bstieler's findings.
- The majority (41%) also agreed that collaboration complicates product development and makes the control and management of the development process more difficult.
- The vast majority (58%) believed that collaboration did not accelerate the product development and (43-44%) believed that it does not allow product development to adapt better to uncertainty.
- Strong opinion that collaboration did not make product development more responsive to customer needs (50%),
 - that it did not allow product development to respond better to market opportunities (63%),
 - that competitive benefits arising through product development are not enhanced (65%)
 - that the incorporation of new technology in product development is not facilitated (70%).

Indeed the only advantage was seen to be that collaboration makes product development more responsive to supplier needs.

Other studies show similar results regarding collaborative projects, for example Harrigan (1988) investigated 1000 companies who were experienced in collaborative ventures. The results showed that only 45% were satisfied with the outcomes. Furthermore in Norburn and

Scheonbergs study in Connell & Dooley, (1991) it was found that 40% of the collaborations were deemed as disappointing.

One other finding that is perhaps a cause of these problems is the lack in knowledge both internally and externally about how to implement the collaborative strategy. Although more of an obstacle than a pitfall, the findings suggest that effective implementation requires sufficient experience and expertise (Freeman, 1991). Respondents mentioned potential problems concerning lack of awareness on how to approach potential partners in larger companies it was found that internal resistance was a factor that had to be dealt with effectively.

What the findings from the majority of these research projects seems to be suggesting is that companies are finding the management of such collaborative ventures considerably more complex than expected and inefficiencies here will reduce possible benefits and performance gains and might even lead to reductions in efficiency.

In order to overcome these pitfalls, the concept of collaboration management is suggested which bears strong similarities to the recommended procedure for developing strategic partnerships as suggested by the DTI/ SMMT (1991). It is also suggested that organisations about to enter into such arrangements attempt to resolve the following:

- what it is that they hope to gain form the relationship
- the risks involved
- the appropriate form of partnership
- the choice of partner
- the choice of people involved
- how to audit the process of partnering

- how to maintain focus
- ensuring organisational procedures exist for learning from experience

The mechanism for change in each of the above will depend on the companies involved, the industry type/sector, the geographic location of the organisations, the size of company, etc.

2.1.14 Discussion

Collaboration between companies is not a new concept but it is only in recent years that it has been identified as having the potential to improve project outcomes. The term partnering is now widely used in many industry sectors in order to help describe the concept of mutual co-operation, and to help identify the benefits that can be gained from the utilisation of resources from other organisations.

The automotive industry has been identified as perhaps the main proponent of partnering concepts and indeed long-term collaborative relationships between especially buyers and suppliers in the industry have led to significant improvements in overall project efficiency regarding cost and value.

Furthermore the industry, from post war to the present, has been in a state of considerable flux, due to macroeconomic factors, increased competition and changing markets. None the less the proven ability of this sector to successfully overcome the difficulties culminating in a more efficient and productive industry has perhaps resulted in somewhat over optimistic expectations, concerning potential success levels of partnering strategies, in other industry sectors.

There has been considerable analysis of the automotive sector regarding strategic partnering and the benefits it has bestowed, however there has been little research undertaken in pursuit of assessing the transferability of such concepts to other industries. Analysis has provided many guidelines and proposed methodologies for the implementation of partnering strategies, which have been briefly described, however the supposition that implementation in other sectors will be as successful is perhaps dangerous. The organisations involved in automotive manufacturing have certain ideologies, constraints and motivating factors and the industry has a certain culture producing specific product types and selling to specific markets. It is therefore, perhaps reasonable to assume, bearing in mind the differing attributes of most industry sectors, coupled with differing levels of maturity and various development histories that the drivers for change in the automotive industry may not exist to the same extent in other industry sectors, if at all. The main drivers in the automotive sector can be identified as:

- Increased pressure on companies due to macroeconomic pressures
- Increased competition from Japan, inevitable expansion
- Importance of production efficiency and quality in marketplace and companies ability to compete
- Assemblers desire to off load design and management responsibility onto suppliers organisations
- 'Do or die' decision for suppliers
- Benefits seen in collaboration from both suppliers and assemblers through sharing of resources including knowledge.

Indeed, it can also be seen, for example, in the electronic components industry and telecommunications sector that the partnering concept has been received with more scepticism and research findings show that

success levels of recently implemented partnering policies do not suggest decidedly beneficial outcomes. As a result, numerous disadvantages have been revealed centred predominantly on the management of such partnerships and the additional complexity and cost they can introduce. These additional complexities might have the result of blocking the partnering arrangement to the extent that no benefits are gained and even in some cases actually reduce the efficiency of an existing organisation.

One further factor identified is that many commentators talk about partnering being of mutual gain and infer that the collaboration is equal in terms of benefits. Not only is it difficult to assess the degree of benefits partnering introduces, it would seem (in the instance of the automotive industry) that such equality is not the case and perhaps never has been. As Toyota said in 1940, 'the assembler should control the relationship' and this has been true in the case of most Western assemblers who adopt collaborative working practices with suppliers. At the commencement of such long-term strategies many suppliers had little choice but to agree to collaboration if they wanted to survive in the market place, even though many would have been reluctant to take on some of the tasks required of them by the assembler (Biemans, 1990).

Without the necessity to compete with Japan on its own terms and without the stress model phase introducing additional reasons for people to work together in order to compete more effectively, the partnering philosophy would perhaps not be so widely implemented today in this sector. Whether other industries have such drivers in order to develop more of a universally accepted partnering ethos is therefore an important factor in whether such strategies can be transferred to other sectors. Partners must be aware of potential imbalances in the relationship as well as the possibility of a breakdown. Developing mutual aims and objectives and keeping partnered

organisations motivated are some of the most important factors. Therefore any initial conflicts or differences in ideologies between potential partners are a major obstacle to overcome before such a venture can be commenced. In such industries as UK construction, which is widely recognised as being adversarial consisting of many different organisations, having fundamentally different aims and objectives from projects, this will be an important factor in the successful implementation of partnering policies.

2.2 Partnering Research in Construction

There is a considerable amount of empirical and non-empirical research being undertaken in partnering for construction, which will be referred to throughout this section. The leading UK work has been undertaken by the University of Reading, culminating in the book entitled 'The Seven Pillars of Partnering' as well as the work undertaken on WG12. More recently there has been a plethora of empirical research that is focused on specific aspects of partnering such as research on Project Specific Partnering, research with an international focus and research investigating dual partnerships. There has also been a range of non-empirical studies, which conceptualise or prescribe types of partnering, partnering models and partnering processes. The most prominent of these studies both empirical and non-empirical will be summarised in this section.

A major review of partnering research undertaken by Li, H et al (2000), revealed that half were furnished with a degree of empirical research, which had four main themes, being:

1. Project partnering
2. Examining a dual partnership relationship
3. Emphasising a special application
4. Having an international focus

2.2.1 Project partnering

Larson (1995) undertook a large sample of 280 construction projects in order to examine alternate approaches to management success. By comparing four types of owner-contractor relationship, six major criteria

were postulated which could be used to measure the degree of success of the relationship established in a project. These are:

- i. Meeting schedule
- ii. Controlling cost
- iii. Technical performance
- iv. Customer needs
- v. Avoiding litigation
- vi. Satisfaction of participants

Using these criteria comparisons were made between low bid and high bid projects. The findings supported that partnering was successful in managing the owner-contractor relationship in both low and high bid projects.

Other notable work undertaken in the field of project specific patterning includes Crane *et al.* (1997) who have developed a five step project partnering process model which includes internal alignment, partner selection, alliance alignment, project alignment and work process alignment. Loraine (1994) describes project partnering and argues that its use can afford long-term benefits. Both Baden-Hellard (1995) and Bennett and Jayes (1995) provide detailed guidelines and prescriptions on how to implement project partnering.

2.2.2 Examining a dual partnership relationship

There are a range of studies that have been conducted which investigate dual relationships in construction projects. Ruff *et al.* (1996) investigated the impacts of owner- contractor relationships on the performance of contaminated site redemption projects and revealed that partnering was highly conducive to effective project delivery. By analysing in depth ten completed projects, Nam & Tatum (1992) found that there is a low degree of integration between design and production functions. They developed four non-contractual strategies for integration. Consisting of:

- i. Owner's involvement
- ii. Developing long term relationship
- iii. Employing integration champions
- iv. Establishing professionalism (of participants).

Weston & Gibson (1993) undertook research, which investigated owner-contractor relationships in public sector partnering. Results illustrated that partnering was a viable contract administration method for public sector projects and showed notable performance improvements in the areas of cost change, change order cost, claims cost, value engineering savings and duration change (when compared to non partnered projects).

Some of the other research undertaken was less positive revealing problems and disproportionate risks allocation for some of the partners. Dozzi *et al* (1996) undertook a survey, which examined the current practices of owner-contractor relationships and revealed that partnering had not been effectively implemented especially in the public sector. Hinze and Tracy (1994) investigated contractor/ sub contractor relationships and assessed the views of the sub-contractors with reference to five main

phases of the subcontracting process. The results revealed that the subcontractors believed themselves to have to accept contractors terms no matter what they were because they didn't want the contractor to simply move on the next sub contracting organisation (who would accept the terms). They felt because of this they were accepting risks they would not by choice accept. Puddicombe (1997) investigated designer-contractor relationships by capturing their responses to set of project critical aspects. The results revealed that both parties had differing views regarding project success criteria and method for integration and it was concluded that these disparate views were the cause of the adversarial relationship.

2.2.3 Research emphasising a special application

Pocock *et al.* (1996, 1997) used empirical studies to test a projects Degree of Interaction (DOI) measure and investigated four approaches to project integration (traditional, partnering, design-build and combination). The research revealed that partnering was an effective integration strategy over the traditional approach and led to improved project performance. Matthews *et al.* (1996) undertook survey-based research with the aim of developing a selection process of subcontractors. It was found that the approach led to the heightened co-ordination between the two parties

2.2.4 Having an international focus

Internationally focused research on partnering in construction is scarce, however the most notable are the studies undertaken by Badger & Mulligan (1995) and Sillars & Kangari (1997). Badger & Mulligan (1995) study the characteristics of international alliances and grouped the responses into seven functional areas marketing, finance, operations, technical elements, management personnel, labour and government, each of which were shown to represent a unique set of criteria for functional success.

Sillars & Kangari (1997) undertook research with three large Japanese organisations that had international affiliates and investigated how the parties must strategically plan in order to win and deliver new contracts. Factors such as communications, transportation, political awareness, strength of resources and technology were shown to be of great importance.

2.2.5 Japanese Success

Partnering in construction has a history of being more effectively utilised in other countries than in the UK. From the review of the automotive sector it can be seen that Japan is at the zenith of effective partnering with collaboration and long-term relationships being inherent to the Japanese way of doing business. Collaborative relationships are implicit to Japanese management methods and are not restricted to a minority of unique projects. (Sillars & Kangari, 1997) Reliable quality, high levels of productivity, purchasing costs at 30% lower than the UK equivalent and timely completion have been achieved through collaborative long term relationships³. The stability afforded through such collaboration, until Japans recent economic downturn, has also led to far greater levels of R&D, training and hence innovation than in the UK. Furthermore procedures and designs are heavily standardised, with standard procedures for construction planning and design, being implemented prior to the commencement of site work where standardised control procedures are utilised. Such a scenario would simply not be achievable if relationships were unique to each project.

The relationship between main contract and sub contractor is also far more long term than is usual in the UK, and relationships are akin to those described in the automotive review, with sub-contractors working for the

³ According to W.S Atkins, (1994).

same one contractor for decades, trusting and depending on them for future work and agreeing to their cost and time requirements. Previous good will and fair treatment maintains trust and in essence the contractor acts as a parent company, looking after the best interests of the sub contractor and genuinely attempting to provide opportunities for its success and growth. Rewarded with greater quantities of work for good performance the sub-contractors will attempt to innovate, looking for improvements to processes in order to improve quality, reduce waste and improve productivity. (Sillars & Kangari, 1997)

Similar trusting, long term relationships between clients and contractors lead to the agreement of realistically attainable project goals, programmes and pricing which vastly reduces the likelihood of claims. Furthermore Japanese clients are not attracted by the lowest price alone and require certainty of product quality, as well as certainty of delivery at the right time and price. They demand continual improvement from their contractors and the contractors like their sub-contractors are given the support and resources in order to achieve this. This approach known as Kaizen is a key ingredient in Japanese success. It was Japanese competition as described in the Automotive review that led the US to reconsider its management approach (Atkins, 1994).

2.2.6 American Success

Partnering has been utilised successfully in the US construction industry since the mid 1980's when pressure from the Japanese instigated a wide spread reappraisal of management style and methodology. Although strict competition laws exist in the states where all contractors on public sector projects must be selected competitively, partnering has been effectively implemented on projects, by selecting contracts and suppliers through

competition and then setting up partnering arrangements with them. In the private sector strategic partnering is the most common form and has been successfully embraced by many large construction organisations. Culturally, as in Japan, partnering is more readily in tune with American management styles and philosophy's than in the UK, and the existence of a strong national solidarity in the US culture, signals a more co-operative tradition than in the UK industry (Bennett & Jayes, 1995).

The adoption of partnering has occurred to such an extent that a new profession has developed in the USA that of the partnering facilitator, who are used at most partnering workshops. The requirement of such skills by the industry indicates the extent to which the partnering approach has been adopted in the US. (Ronco, 1996; Rackham, 1996; Silver, 1993; Poirer, 1993; Sujansky, 1991; Bergquist, 1995; Moberly, 1993).

2.2.7 Partnering in the UK Construction Industry

The most successful examples of partnering in the UK are from the oil and gas industries in the construction of complex energy facilities such as off shore oil platforms, which require input of a large number of remote disciplines and require highly skilled personnel who are managed by a rigorous strategy, due largely to safety considerations. Low market prices and increasing operational costs reduced the profitability of operations heavily and within a short period of time the need for greater efficiency in the construction of such hugely expensive facilities was required. Studies have revealed some large savings such as BP Andrew and Shell has reduced construction costs by almost 35%. Further development of partnering strategy's to include design organisations as well as contractors is expected to afford even greater results. Such performance improvements have overcome a number of barriers to partnering which are indicative to

UK culture, such as short-termism, adversarial relationships throughout the supply chain, blame culture and poor feedback. The success of partnering despite these barriers, bodes well for the implementation of partnering in building construction where such problems are still widely evident.

Civil engineering has also seen some successes in recent years through the use of partnering, and research reveals there is considerable enthusiasm to the approach. In summary fewer obstacles will be encountered when attempting to develop mutual objectives and agree on roles in civil construction than in building construction because participants are similar engineering based backgrounds and can perhaps identify with others roles and responsibilities more readily. Civil engineering also provides opportunity for greater standardisation of design details and construction processes⁴.

2.2.8 Partnering Definitions

Evidence indicates that some of the concepts of partnering, such as the development of common goals and shared objectives between firms, have been around a long time in the construction industry with many mature relationships in existence. One such example is Bovis, who have developed a culture and tradition of non-adversarial relationships with particular clients since the 1930's. Recently attempts have been made to label such arrangements as 'partnering'. In practice, the term partnering can cover a broad spectrum of relationships flavoured by the particular stakeholders and their specific arrangement. Partnering in construction has been defined in many different ways. The most prominent of these are listed below:

⁴ The ICE has produced a Partnering section for its NEC form of contract.

“Partnering is a contractual arrangement between a client and a chosen contractor which is either open ended or has a term of a given number of years rather than the duration of a specific project. During the life of the arrangement, the contractor may be responsible for a number of projects, large or small and continuing maintenance work and shutdowns. The arrangement has either formal or informal mechanisms to promote co-operation between parties” (NEDC ,1991).

1. According to Crowley& Karim (1995) partnering can be defined in three main ways:

“The anticipated outcomes or attributes of partnering, such as compatible goals, mutual trust, long term commitment, etc”

(i) “The process that led to the outcomes where partnering is used as a verb to indicate an action, such as committing to common goals, organising partnering workshops, developing trust, etc”

(ii) “The organisation interface that generates the organisational structure”

2. *“...a management approach used by two or more organisations to achieve specific business objectives by maximising the effectiveness of each participant’s resources. The approach is based on mutual objectives, an agreed method of problem resolution and an active search for continuous measurable improvements” (NEDC, 1991)*

3. *“Partnering is a co-operative approach to contract management for the purpose of reducing costs, litigation and stress” (Cowan, 1991)*

4. *Partnering is a commitment to recognise owner-contractor relationships as integral parts of the daily operations involved in construction. (Abudayyeh, 1994).*

5. *“Partnering is a method of transforming contractual relationships into a cohesive project team that comply with a common set of goals and rely on clear procedures for resolving disputes in a timely and effective manner. (Cowan et al. 1992).*

6. *“Partnering is a long-term commitment between two or more organisations for the purpose of achieving specific business objectives by maximising the effectiveness of each participant’s resources...The relationship is based on trust, dedication to common goals and an understanding of each other’s individual expectations and values. Expected benefits include improved efficiency and cost-effectiveness, increased opportunity for innovation, and the continuous improvement of quality products and services” (CII, 1996)*

The multitude of partnering definitions has served to confuse many within the industry. Davidson & Trinnick (1997) argue that the term ‘partnering’ has been used *“too loosely and as a consequence is in danger of becoming debased”*. More recently however there has been a considerable emphasis placed on clearly defining what is partnering is and how it should be implemented. Li et al, (2000) suggest *“that future research should focus on empirical studies of the following directions”*;

- investigating better performance measures
- developing and testing partnering models and processes
- formatting and selecting partnering strategies

2.2.9 Partnering in Construction: The Nature of the Relationships

Baldock (2000) defines the principal requisites for partnering as:

1. Shared objectives between client and project team
2. Set down individual responsibilities at the outset and make them known to the rest of the team
3. Commit to continuous improvement and monitor progress using key performance indicators
4. Have common procedures for resolving problems and allocate the role of the dispute mediator
5. Allocate risk clearly among the team
6. Set out incentive/penalty arrangements
7. Try to resolve disputes through senior management before resorting to a dispute resolution procedure
8. Use open book accounting
9. Streamline supply chain management

Arrangements in construction are frequently categorised in terms of length of relationship and there appears to be two main types of partnering in

construction that there is relative agreement in their definition. These are Project Specific Partnering and Long Term Strategic Partnering.

2.2.10 Project Specific Partnering

As the term clearly implies this relates to partnering based upon a specific project. Project Specific Partnering usually involves a client and main contractor adopting some explicit shared values, such as principles for improving productivity, quality and completion to schedule, so as to reduce claims and to provide a way of taking cost out of the construction process. Project Specific Partnering and Total Quality Management (TQM) are inextricably linked in the search for continuous improvement in construction activities (Pokora & Hastings, 1995). Loraine (1994) argues that project partnering has long-term economic considerations. For example price competition has been perceived by many to 'pollute' the genuine partnering relationship. Matthews et al. (1996) state that because the majority of construction projects are one-off it is likely that Project Specific Partnering will take the leading role in promoting non-adversarial relationships between project participants, which is supported by Brochner (1990) who states that there is a need for project networks where members consist of all the information intermediaries that support a single project. (Woodrich, 1993).

Saad & Hancher (1998) suggested that partnering is an effective management tool to navigate the project management process, from the planning phase to the commissioning/ start up phase, via design, procurement and construction phases. Lazar (1997) alternatively, identified four major barriers to partnering, which are: external environment, organisational culture, organisational climate and organisational structure.

Li, H. et al. (2000) summarise the key characteristics of the Project Specific Partnering stage as:

- Co-operation between parties extends beyond the signed contract.
- The inter organisational team is supposed to be established
- Information, resources and even risks are shared among all the parties in the team
- Claims and win-lose mentality are replaced by incentive and mutual give and take, respectively.
- Project objectives are clear and accepted by all parties.
- For a higher level of project relationship, the team should develop a longer term of partnership, a set of goals beyond the individual project objectives and a set of partnership measures different from those used on individual projects.
- The higher the level the more the cohesion of the team members approaching to the formation of an integrated team, which needs trust and accepts collective accountability.

2.2.11 Long Term Strategic Partnering

This form of partnering is usually entered into by a major client with long term requirements for a particular type of facility, component or service, forming a relationship with a contractor to provide construction services, with certain agreements about how prices will be negotiated (Baden-Hellard, 1995; Torvatn, 1998). Stipanowich & Matthews (1997) suggested the use of Dispute Avoidance and Resolution Task Force (DART) to

change the culture of the construction industry by restoring a spirit of co-operation and teamwork. The strategic partnering concept was incorporated into a logistics approach to the procurement process developed by Agapiou *et al.* (1998). The work highlights the importance of active participation from top management, long-term development of relationships between construction parties, the establishment of confidence and dependence between parties, in the development of effective long term partnering arrangements. Krippachne *et al.* (1992) suggest that long term partnering might improve vertical integration and maintain a company's competitive position. Cook & Hancher (1990) suggest that partnering can be used to distribute risk between parties resulting in reducing exposure while vertical integration internalises risk.

Thompson & Sanders (1998) refer to strategic partnering as a coalescing relationship that involves re-engineering processes to fit cultural integration and Ellison & Miller (1995) used the term synergy to explain such a relationship. They define synergy as:

“a synergistic relationship seeks furtherance of the parties that commit to modify work practices and have a desire and willingness to experiment with new models, approaches and means of solving problems to attain superior performance.”

New partners will not be able to achieve a state of Long Term Strategic Partnering so early and will need know and experience other parties concerning their preferred styles of work and management, and share among themselves with their missions, value and visions (Li, H. et al., 2000).

It is critical for the partners to have compatible inter organisational goals and objectives, no advanced partnership can be formed. Li, H. et al., (2000)

suggest the following key requirements for achieving a strategic partnering relationship.

- Construction parties are normally weak in bargaining power and therefore need to form a strategic alliance to strengthen their relationship
- The parties should have a common focus on long term rather than short-term benefits
- An inter-organisational team must be formed that should be composed of senior executives of the involved parties, which should have a thorough understanding of the practice of their own organisations and are authorised to vote on behalf of their top management
- Independent measuring system should specifically cater for the projects and the alliance/relationship
- The relationship- specific measures should attach to some incentives especially delivered to the team members
- The team should look for opportunities for major breakthroughs, which tie to excellent project and organisational performance

Partnering arrangements can also be categorised in terms of type of relationship. One form of partnering is that of an *attitude* (or philosophy) which itself summarises 'good practice' in terms of dispute / conflict avoidance and minimisation (as opposed to dispute resolution).

Partnership is...very much an attitude of mind and one that requires fundamental changes in behaviours that have characterised the construction industry for the last 25 years.' (Groak, 1994)

There is also the 'partnering', which could be termed a building procurement *technique*. This tries to operationalise the good practice, to bring about cultural change and thus create a more cohesive team. Holti of the Tavistock Institute talks about the 'relationship' level of partnering and also the 'procurement' level (1996).

Also, recent work (Pokora & Hastings, 1995), (Loraine, 1993) fall into the category of regarding partnering as a central component for alleviating construction's problems, almost the 'universal panacea'. The above work is based on the premise that partnering is a good thing and can be implemented through a *formal approach, a technique* including such procedures as pre-selection of contractors, team working workshops, the identification and promotion of 'champions', a role for a facilitator and a form of contract.

2.2.12 Drivers for Change

Post war construction has been regarded as fragmented, adversarial, dispute ridden, costly and lacking in investment. The construction industry in most developed countries suffered from high inflation rates and oil embargoes in the early 1970's (Cook & Hancher 1990), which caused significant economic pressures on the industry, which fuelled competition between organisations and led to conflicts, disputes and fragmentation.

However nearly thirty years later many of these problems are still evident in the industry. Thompson and Sanders (1998), state that there are a high percentage of redundant efforts, too many supervisory activities and frequently a disappointing termination of relationships. There is an inherent lack of communication and cooperation among contractual parties which

results in cost and schedule overruns and ultimately litigation. (Wilson et al, 1995). Crowley & Karim (1995) discuss the detrimental outcomes, such as litigation, lost time, wasted money and poor morale.

Although requirements of clients have changed, the industry has not radically altered the way in which it organises or manages construction projects and although new approaches have developed, such as design and build and negotiated tenders, there has been much resistance to change from the established pattern . However, the current climate in construction appears to be one of change. Since the early 1990's the industry has faced new key changes (Thompson & Sanders, 1998), consisting of:

- *Macro-economic factors* - relatively poor state of the industry with orders only a fraction of historical levels, financial condition of companies, profitability levels
- Existence of a global economy
- *Client push*, making demands for improved value from contractors and sub-contractors. Emergence of the professional client entering a partnership with preferred contractors, architects and sub-contractors. A deep-seated need exists to satisfy clients.
- Recognition by construction of the need for greater levels of *customer orientation* and *customer care*
- Enhanced legal concerns
- Increased risk in construction contracting
- Identified need for new culture due to history of conflict and adversarial nature of the industry

- Increased levels of international competition and the fact that most of the UK's European competitors invest three to four times more in construction research

The increased competition and increasing demands from clients has led to organisations seeking better management solutions, embracing such concepts as TQM (Total Quality Management, BPR (Business Process Re-engineering) and partnering. Wilson et al (1995) state that partnering can be expected to achieve quick results with minimal start up costs in terms of the other approaches. According to Badger & Mulligan (1995), organisations will partner for the following reasons.

- Access technology
- Share risks
- Secure financing
- Enter new markets
- Serve core customers
- Improved competitive position

2.2.13 Application of Partnering to Contractual Relationships

Although partnering in the fullest sense can be used to reduce contractual complexity⁵, it is currently more usual for the concept to be applied or overlaid on more traditional design and construction contracts. This is most likely due to the concerns by many parties of altering familiar contracts and

⁵ and as is recommended by Egan (Section 2.2.16.2)

the perceived risk in less contractual reliance especially when partnering arrangements are implemented on a project specific basis only.

The 1991 NEDC report identified three forms of Partnering:

1. Pre-selection agreements: *consisting of early identification of contractors or suppliers for future contracts and the provision of information to those contractors or suppliers in forward planning.*
2. Co-ordination agreements: *voluntary agreements overlaid on a standard contract for implementation.*
3. Full Partnering agreements- *contractual arrangements for unsupervised provision of services, either by client and contractor jointly or by the contractor with the minimum client involvement.*

A subsequent report 'Partnering in the Public Sector' by the European Construction Institute (ECI, 1997), examined how partnering sits with EC directives procurement directives and competition rules. At this point the Framework Agreement was identified which would permit the letting of contracts under it without a further call for competition. Such a Framework Agreement would have to be let in accordance with the relevant EC directives. It was also suggested in this report that contracts could be let on the basis that the same contractor be required and invited to provide repeat works or services in the future.

Both reports suggested that existing forms of contract could form suitable basis for partnering arrangements (although the NEDC Report 'Partnering without Conflict' (NEDC, 1991) concluded that the benefits of partnering are less identifiable when used in conjunction with conventional contracts).

The 1991 NEDC report refers to the ICE Conditions of Contract for Process Plant Revised April 1981 and proposes contract conditions for use

with it, which contain elements of the partnering approach. The report suggests a schedule setting out the philosophy and organisational structure of the arrangement including:

- Co-ordination procedures (including terms of reference for facilitator)
- Scoping of projects and handing variations to scope
- Responsibilities (joint and individual)
- Health and safety auditing and monitoring
- Completion and taking over of projects by owner
- Performance testing
- Productivity monitoring
- Steering committees and review arrangements
- Continuous improvement
- Quality
- Safety
- Teamwork

The NEDC (1991) report commends the New Engineering Contract, the consultative version being produced in January 1991. This version was used in a number of different types of contract in a number of different countries and feedback was obtained. The first edition of the New Engineering Contract was produced in March 1993 with the most recent

revision being in 2001, which includes a partnering option (Bennett & Baird, 2001).

2.2.14 Private Finance Initiative

The Private Finance Initiative (PFI) involves organisations having a financial interest in the operation of the facility and this involvement throughout the lifecycle of the facility provides opportunities for the development of long-term relationships and agreements between the principal parties involved.

Essentially PFI is therefore a form of partnership between the private and public sectors. It was announced by the government in November 1992 (Autumn Statement) and in November 1993 the Private Finance Panel was established under the chairmanship of Sir Alistair Morton. It aimed to encourage the private sector to come up with ideas and take forward projects that previously would have been undertaken in the public sector, and to bring commercial disciplines to all stages of projects.

Contractors often form contractor groups consisting of organisations with complimentary strengths that collectively bid for projects. Groups will have skills in construction, design management and operation of the projects they are bidding for.

There are several projects, which come under the PFI umbrella such as:

1. DBFO (Design build finance and operate) toll roads
2. DCMF (design construct manage finance) prisons,
3. BOO (Build own operate) sewerage and water schemes

There are also numerous projects being set up in the rail, health and rapidly expanding education sectors. The attributes of PFI, which can be closely associated with partnering, are:

1. The private sector undertakes a long-term commitment, going beyond the initial construction phase of the project
2. The private sector role extends to management and/ or operation as well construction and maintenance
3. “Getting it right” in cost and quality terms maximises the operational return the private sector receives from the project.

PFI is likely to act as a catalyst for the development of more common forms of partnering arrangement and for the uptake of the partnering approach in general.

2.2.15 Latham: Partnering & Contract Conditions

In July 1994 the Latham Report (Latham, 1994) recommended that the New Engineering Contract be adopted by clients in both the public and private sectors and suggested that it should become a national standard contract across the whole of engineering and construction work generally. In accordance with this recommendation the name of the main contract was changed for the publication of the second edition, which is now entitled ‘The Engineering and Construction Contract’, which now forms part of the NEC family of contracts, which include the professional services contract, the Engineering and Construction Sub Contract and the Adjudicators Contract.

Following the initial NEDC reports of 1991 and 1992 and the first NEC contract in 1993 the most high profile report to embrace and advocate partnering was the Latham report. Because the report formed the most notable review of procurement and contract conditions in the UK construction industry for number of years it will be referred to throughout this thesis along with the subsequent Egan report which is discussed later. Latham addresses many aspects of procurement and contract strategies many of which are focused on reducing conflict and complexity and improving communication and relationships between project participants. When considering how to address the concerns of all sides of the construction process regarding contracts, Latham suggests there are three courses of action.

1. To do nothing
2. To amend existing standard forms to meet the needs of some of the concerns
3. To try and define what a modern construction contract ought to contain. If this can be achieved, there are then two further alternatives, which are to change existing contract forms to take account of such requirement, and or to introduce a new contract, which will deliver them.

Stating that 'doing nothing' is not an option Latham suggests five basic questions should be considered before choosing alternatives.

1. Are there too many forms of contract or too few? Does the number matter?
2. Are some of them inherently adversarial, or likely to produce conflict because of the modern structure of the industry?

3. Are there some procurement routes, which are more likely to produce a result which meets the client's wishes, and which should therefore be followed? If so which?
4. Are there certain features, which should be adopted across the range of contracts?
5. Are there any contracts that should be used more often?

In response to these questions Latham stated that the number of available contracts is not significant. Clients should choose the procurement route that best suits their purpose, and use the appropriate form of contract. He also suggested that contracts are drafted on the basis that-

- Design and construction are totally separated, in that the main contractors and sub-contractors have no design responsibilities or involvement in the preparation of the design;
- All design work will be fully planned by consultants retained by the client and not be subject to change once tender information has been sent out;
- The actual construction work to be mainly carried out by the contractor rather than domestic sub-contractors;
- The architect or engineers acting as contract administrator to also be accepted by the parties to the main contract as impartial adjudicator between client and contractor, especially over matters relating to the measurement and certification of work done and relating to measurement and certification of work done and related payment or time issues;

- Do not seem to relate easily to reality on modern construction sites and may require revision or replacement by other contractual approaches.
- Contracts which best meet client objectives on procurement may involve modules, which can be adapted by mutual agreement the particular project. Putting the modules into a standard format means that the system brings together flexibility and familiarity:
- Certain common features are desirable. They should include: -
 - A general duty to trade fairly, with specific requirements relating to payment and related issues.
 - Clearly defined work stages, including milestones or other forms of activity schedule;
 - The pre-pricing of any variations
 - An adjudication system which is independent of contract administration
 - The approach of the new engineering contract is extremely attractive.

From Constructing the Team (Latham, 1994), page 36

Furthermore the Latham recommendations regarding effective forms of contract in modern conditions are strongly supportive of a partnering approach. They are:

- A specific duty for all parties to deal with each other and with their subcontractors, specialists and suppliers, in an atmosphere of mutual co-operation.

- Firm duties of teamwork, with shared financial motivation to pursue those objectives. These should involve a general presumption to achieve “win-win” solutions to problems, which may arise during the course of the project.
- A wholly interrelated package of documents which clearly defines the roles and duties of all involved, and which is suitable for all types of project and for any procurement route.
- Easily comprehensible language and with guidance notes attached
- Separation of roles of contract administrator, project or lead manager and adjudicator. The project or lead manager should be clearly defined as client’s representative.
- A choice of allocation of risks to be decided as appropriate to each project but then allocated to the party best able to manage, estimate and carry the risk.
- Taking all reasonable steps to avoid changes and pre-planned works information. But where variations do occur, they should be priced in advance, with provision for independent adjudication if agreement cannot be reached.
- Express provision for assessing interim payments by methods other than monthly valuation i.e. milestones, activity schedules or payment schedules. Such arrangements must be reflected in related subcontract documentation. The eventual aim should be to phase out the traditional system of monthly measurement or re-measurement but meanwhile provision should still be made for it.

- Clearly setting out the period within which interim payments must be made to all participants in the process, failing which they will have an automatic right to compensation, involving payment of interest at a sufficiently heavy rate to deter slow payment.
- Providing for secure trust fund routes of payment.
- While taking all possible steps to avoid conflict on site, providing for speedy dispute resolution if any conflict arises, by a predetermined impartial adjudicator/ referee/expert.
- Providing for incentives for exceptional performance.
- Making provision where appropriate for advance mobilisation payments (if necessary, bonded) to contractors and subcontractors, including in respect of off site prefabricated materials provided by part of the construction team.

From Constructing the Team, (Latham, 1994), page 37

2.2.16 The Egan Report: Partnering Recommendations

Sir John Egan's report (Egan, 1998) also recommends the adoption of partnering arrangements under suitable conditions. The report discusses the importance of integration and improved communication in the industry and suggests, as Latham does, that cultural change is required in the industry. Egan refers to partnering specifically on a number of occasions in the report such as partnering the supply chain in Chapter 3 and long-term relationships in Chapter 4. He discusses the importance of reducing tendering and replacing contracts with performance measurement. The relevant paragraphs within these sections are summarised below.

2.2.16.1 Partnering the Supply Chain

Paragraph 45

The Task Force envisages a very different role for the construction supply chain.

“In our view, the supply chain is critical to driving innovation and to sustaining incremental and sustained improvement in performance.”

Partnering is however far from being an easy option for constructors and suppliers. There is already some evidence that it is more demanding than conventional tendering, requiring recognition of interdependence between clients and constructors, open relationships, effective measurement of performance and an ongoing commitment to improvement. An essential aspect of partnering is the opportunity for participants to share in the rewards of improved performance.

In summary partnering the supply chain involves the following:

- Acquisition of new suppliers through value-based sourcing
- Organisation and management of the supply chain to maximise innovation, learning and efficiency
- Supplier development and measurement of suppliers performance
- Managing workload to match capacity and to incentivise suppliers to improve performance
- Capturing suppliers innovations in components and systems

2.2.16.2 Long Term Relationships

Paragraph 67

An essential ingredient in the delivery of radical performance improvements in other industries has been the creation of long-term relationships or alliances through out the supply chain the basis of mutual interest.

Paragraph 68

Partnering on a series of projects is a powerful tool increasingly being used in construction to deliver valuable performance improvements. We are proposing that the industry now goes a stage further and develops long-term alliances that include all those involved in the whole process of delivering the product, from identification of client need to the fulfilment of that need.

Paragraph 69

In this connection, the task force wishes to see:

New criteria for the selection of partners

This is not about lowest price, but ultimately about best value for money. Partnering implies selection on the basis of attitude to team working, ability to innovate and to offer efficient solutions. We think that it offers a much more satisfying role for most people engaged in construction.

An end to reliance on contracts

Effective partnering does not rest on contracts. Contracts can add significantly to the cost of a project and often add no value for the client. If the relationship between a constructor and employer is soundly based and

the parties recognise their mutual interdependence, then formal contract documents should gradually become obsolete.

Performance Measures

The introduction of performance measurement and competition against clear targets for improvement, in terms of quality, timeliness and cost, as the principal means of sustaining and bringing discipline to the relationships between clients, project teams and their suppliers. There are important issues here, particularly for the public sector.

2.2.16.3 Reduced Reliance on Tendering

Paragraph 71

The most immediately accessible savings from alliances and partnering come from a reduced requirement for tendering. Whilst this may go against the grain, especially for the public sector, it is vital that a way is found to modify processes so that tendering is reduced.

2.3 Risk & Risk Management

The assessment, allocation and management of risk are key ingredients in the new types of more formal partnering arrangements and contracts such as PPC 2000 and the Movement for Innovations “Trust and Money” Model form of Multi-party Partnering Contract for a Virtual Company⁶.

Statistics show that construction remains full of risk especially the risk of delay to construction works (Critchlow, 1996). The management for this risk is therefore crucial. No construction project is free of risk. Risk can be managed, minimised, shared, transferred or accepted. It cannot be ignored (Latham, 1994).

⁶ Currently in consultation draft

A principal aspect of risk management in construction is the appropriateness or otherwise of the choice of construction contract. The type of project, specification and the intended relationship between parties should influence this choice (Capper, 1995). Therefore risk will need to be assessed in the early stages of the project partnering process. Likewise when developing a long term strategy one can surmise it would be sensible for an assessment of the risks of long term collaboration, to be considered prior to an agreement being reached.

The allocation of risk is at the heart of construction contract negotiations.

“An analysis of risks should strongly influence the choice of method of payment and form of contract. The allocation of risks to contractual parties, the method of payment and the form of the contract will all influence the nature of the project. The analysis of project risks needs to consider how the nature of the project is changed by the way the risks are allocated the basis of payment selected, and the form of contract adopted. Accurate anticipation or iteration is required”. (Abrahamson, 1989)

Furthermore, risks and the way in which they are allocated, is central to the decision of whether a project can be financed. One can therefore deduce that the manner in which partnering arrangements and agreements deal with risk is crucial to their success.

2.3.1 Definitions of Risk

Risk has been defined as:

“a variable in the process of constructing a... project whose variance results in uncertainty in the final cost to the owner.” (Levitt et al, 1979).

Smith (1996) categorises risk in construction projects in two ways, contractual risks and construction risks.

2.3.2 Contractual Risks

Contractual risks emanate from contracts, and risk is increased with decreased contract clarity, one-sided contract provisions and imperfect communication and untimely contract administration. There is a very high benefit to cost ratio in dealing with contractual risk through improving both contract clarity and contract administration practices. (Smith, 1996)

2.3.3 Risks of delay and cost enhancement

There are a variety of different types of risk in construction. Pickavance (2000) considers 9 types of risk when considering the risk of delay and cost enhancement to construction contracts being: Legal risk⁷, Dispute risk, Design risk, Procurement risk, Buildability risk, Construction risk, Financial risk, Political risk, and Insured risk.

2.3.4 Risk allocation

Risk allocation amongst project organisations has a direct bearing upon the costs of the project. Unexpected conditions or events may cause costs and time to increase (Smith, 1995). The misallocation of risk has resulted in clients paying more than necessary for a project; either through

⁷ See O'Reily (1995).

contingencies, disputes or extra involvement of staff and consultants. Furthermore it has been stated that the contractual misallocation of risk is the leading cause of construction disputes in the USA. The CII (report 1993) described a frequent failing in the US construction industry.

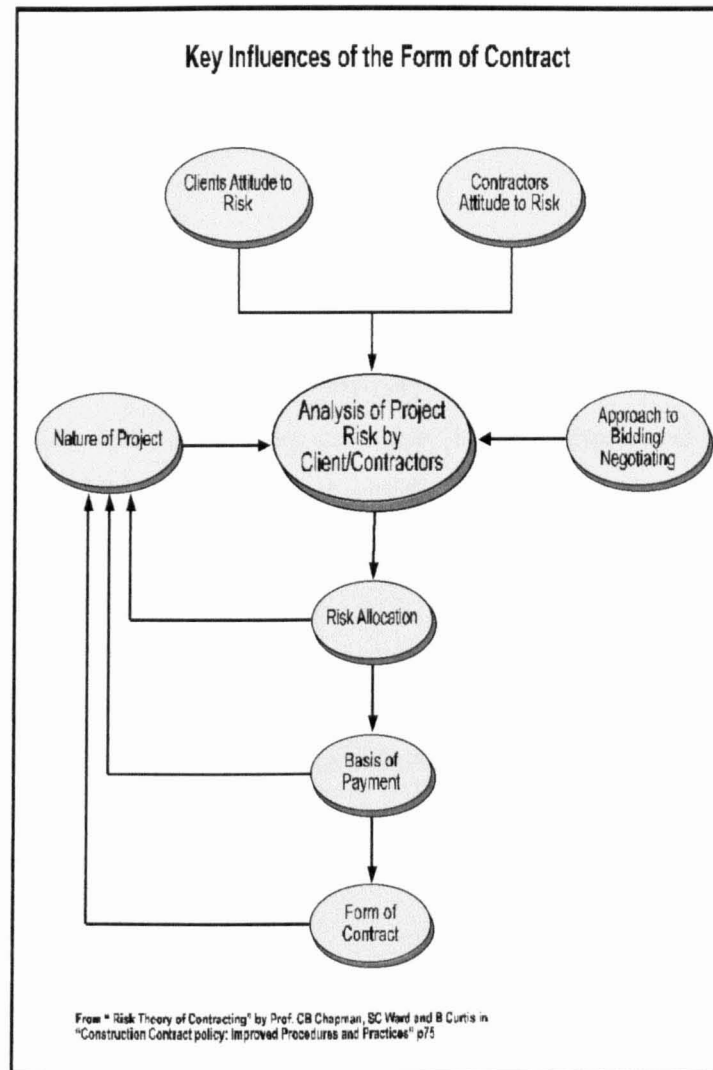
Traditionally the owner and contractor each strive to obtain terms most favourable to themselves. In the heat of negotiations, the parties can easily overlook an important consideration- the cost of victory. When one party minimises the risk that it retains, the overall project cost is often increased to cover risk financing and / or transfer by an amount greater than is necessary because the risks are not optimally allocated among the parties'.

(CII Allocation Report, 1993)

The nature of contracting is that the contracting parties will have conflicting interests. Contractors unsurprisingly, want to be paid as much as possible, while developers generally want to pay as little as possible and to transfer as much risk as possible. (Critchlow, 1996)

2.3.5 Dealing with Risk: The Benefits of Partnering

The principles of partnering can help ensure that risks are effectively considered and more effectively allocated. A major component of the partnering process is an open communication system and honest negotiation. As Smith (1996) suggests workshops and an 'initial brainstorming session' among project participants in which they identify issues of concern or factors of potential change, could be undertaken as a 'post-award risk identification' exercise.



*Figure 1b: Project risk and contract form
(Abrahamson, 1989)*

Smith (1996) further surmises that analysis of the output of such an exercise, the partnering *Charter*, reveals;

"the achievement of the individual goals of the parties is based on effective management of risks during the performance of the contract".

Practical risk management is therefore an important consideration for partners and the opportunity afforded by the structured partnering approach to consider how risks are to be allocated and managed should be utilised to effect.

Abrahamson (1989) provides the following principles for allocating risks / obligations in construction contracts:

1. The risk is within the party's control
2. The party can transfer the risk (e.g. by insurance), and it is most economically beneficial to deal with the risk in this fashion
3. The preponderant economic benefit of controlling the risk lies with the party in question
4. To place the risk upon the party in question is in the interest of efficiency including planning, incentive and innovation efficiency
5. If the risk eventuates, the loss falls on that party in the first instance and it is not practicable, or there is no reason under the above principles to cause expense and uncertainty by attempting to transfer the loss to another

The following table has been formulated as guidance for risk allocation, dealing with client and contractor organisations.

Risks for Contractor	Risks for Client Allocation	Risks to be Shared
Delays in presenting problems	Adequacy of project budget funding	Acts of god
Equipment availability	Adequacy of design	Adverse weather
Equipment suitability	Ambiguous specifications	Cost escalation
Ground subsidence due to	Hazardous materials	Government acts
Ground support	Changes in laws & regulations. after tender	Environmental compliance
Labour availability	Price changes	Environmental constraints
Labour force substance	Procedural changes	Material shortages

Labour productivity	Clarity and completeness of plans	Permits & licences
Labour skills	Competency of employers estimating	
Managerial capability &	Concurrent work	
Managerial/supervisor	Constructability of design	
Materials availability	Contractor qualifications	
Material quality	Delays in decision making	
Means, methods & techniques	Drawing delays & instructions	
Site congestion	Differing site conditions	
Site drainage	Employer Bureaucracy	
Site security	Employer decision making process	
Subcontractor availability	Employer familiarity with construction	
Subcontractor reliability	“timeliness & delivery	
Supplier/vendor competence	Existing utilities/underground	
Supplier/vendor	Ground characterisation	
Union strife & v work rules	Ground Water	
Warranty obligations	Hazardous on site materials	

Table 4: Guidance for risk allocation
(From Abrahamson (1989) and Smith (1996))

2.3.6 Risk Management Process

Smith (1996) suggests the following steps in risk management and allocation:

1. Establish objectives⁸
2. Commitment⁹

⁸ To reduce uncertainties, to reduce potential claims and litigation's, to reduce unenforceable contract language, to stimulate informed bidding, to increase awareness of rights and responsibilities, to make contracting practices more cost effective

3. Scoping & objectives conference¹⁰
4. Project familiarisation
5. Risk identification¹¹
6. Risk allocation¹²
7. Integration¹³
8. Implementation/orientation
9. Evaluation¹⁴

2.3.7 Risk Summary

The construction contract traditionally has allocated risks between parties and in effect acts as a planning tool attempting to reduce surprises and problems during construction. One could therefore identify the contract as a source of risks and therefore a risk in itself. The less clear the contract, the greater the risk it poses (Megens, 1997).

The section has illustrated that the assessment and management of risk, at both project and strategic levels will be important considerations in the

⁹ Commitment needs to be given to the importance of managing risk, including a budget and staffing required

¹⁰ A statement of scope and objectives is generally in place on successful risk allocation efforts

¹¹ Potential risks need to be reviewed and the likelihood of their occurrence on the specific project assessed

¹² Risk should be allocated to the party best able to manage it, a matrix should be developed listing tasks and considerations. Requirements for contract language and or procedures needing modification can be assessed and tasks and assignments allocated

¹³ into contract documents and / or contract procedure manuals

¹⁴ The risk allocation scheme adopted needs to be monitored as part of any CIP procedure

implementation of partnering. The methods for undertaking effective risk assessment and risk management are well documented and have been touched upon in this section. It is not the intention of this thesis to develop a bespoke risk process for partnering. However risks need to be considered at all stages in the partnering process at both project and strategic levels and the methods discussed should be employed by all teams to help define achievable targets and balanced objectives. Risk management procedures should therefore be employed throughout the partnering processes¹⁵ when developing strategy, policy and agreements as well as in selecting project resource.

2.4 Potential Benefits of Partnering to the Construction Industry

The automotive review has revealed that significant benefits are possible from partnering, but that the extent of benefits will depend upon the rigour with which partnering arrangements are developed and implemented. Since the Latham report there has been much speculation regarding the potential of partnering in the UK construction industry but precious little quantitative data has become available regarding performance improvements afforded by long term partnering. The research on which this thesis is based has revealed that there are many perceived and actual benefits afforded by partnering according to the companies surveyed.

From the experiences of the Japanese and US construction industries, and the identifiable improvements to the automotive industry the main potential benefits of partnering would seem to be reductions in wasted time and materials culminating in cost savings over the duration of a project.

¹⁵ See Section 8.6

As partnering has matured in the UK there is overwhelming support for it when it is practiced properly (Baldock, 2000). When it is implemented by good people it achieves good results (Green, 2000), who adds,

“Partnering that is used in a cynical and exploitative way by people rooted in the old adversarial culture of construction, does not achieve these results. A fool with a tool is still a fool.”

The greater integration of the project team will improve the project information system, reducing repetition, misunderstanding, reducing conflict levels and improving the responsiveness of organisations and individuals. The degree to which the efficiency of the project team can be improved, will of course be dependable upon many other factors for example the organisations selected and the compatibility of goals, cultures and procedures of the key project contributors. Longer-term relationships, which offer more time for organisations to become familiar and develop joint systems and procedures for long-term benefit of partners, and will consequently, provide the greatest potential for improvements to project performance and company prosperity (Cooper et al., 1996).

Main contractors that have taken the plunge such as Bovis, Kier, Mansell and Balfour Beatty have seen it pay off. Their investment in recruitment, researching integrated design, IT for supply chain management and management training have led to partnering contracts that have dramatically increased turnover (Baldock, 2000).

2.4.1 Documented Benefits

Badger & Mulligan (1995) summarise the main benefits of partnering as

- Enhanced competitive position

- Increased market share
- Opportunities to obtain new work
- Opportunities to broaden client base
- Increased cultural responsiveness
- Reduced risk
- Increased profits
- Increased labour productivity

WG12 (1997) reported on benefits experienced by a range of organisations that were implementing partnering arrangements, consisting of clients, contractors, consultants and suppliers and states that the following benefits can be achieved if partnering is effectively implemented.

2.4.2 Benefits to Clients

- Partnering workshops can help to create a 'can do' attitude at site installation level. Continuous improvement can provide the momentum for improvements in the day-to-day dealings between parties
- Contractors have increased commitment and the contractor can provide greater resource. This can lead to greater service, innovation and reduced disruption to the customer
- A more creative use of the purchasing resource can occur due to the removal of continual and mundane tendering activities
- Teams focus on getting the job done and not the contractual position. The team philosophy must be 'no surprises'

- Freedom of dialogue during the design phase can provide the opportunity for real buildability
- The involvement of contractors at an earlier stage leads to improved design, and buildability as well as reduced lead times and internal cost
- A critical factor is how to make the communication process more efficient and to ensure misunderstandings are minimised

2.4.3 Benefits to Contractors

- To achieve maximum benefits long term relationships are likely to be formally set down with a shared vision, objectives, principles and practices supported by well trained staff teams
- Benefits can accrue to all parties, and the client in particular can achieve the lowest possible out turn costs and best value for money
- By maintaining staff teams on a continuous working programme, experience can be retained, designs can be refined, more effective construction techniques developed, and improved safety and quality standards achieved
- Improvements in communication enable the design team and contractor to gain a better understanding of client needs
- Earlier involvement can provide quality-planning time, which leads too much more certain timetables
- Accepting and making change is made easier when driven by a shared interest rather than contractual positioning

- An adaptable and flexible approach by the contractor, allows the client to take advantage of the contractors knowledge and experience at every stage of the development process, which facilitates not only a continuous value management exercise, but also early consideration of method, safety and quality issues

2.4.4 Benefits to Consultants

- Benefits are particularly noticeable when things go wrong. The recovery process can be fast, moderate in cost and lacking in bureaucracy
- One of the biggest benefits identified has been the creation of total confidence in each others technical ability and the removal of worries about contractual 'point scoring'
- Long standing assumptions can be challenged and removed
- Initial Workshops are normally highly valued, where relationships can be re-transformed from adversarial to co-operative, using such skills as active listening, analysing and summarising, constructive challenging and the provision of balanced, specific and practical feedback
- The removal of a wasteful tendering process, replaced by for example a rolling contract can be a great improvement
- Continuity of projects can provide a great opportunity to learn form and rectify mistakes

2.4.5 Benefits to Suppliers

- The objective is for all parties to walk away from the contract having made the anticipated contribution and suffering minimal additional costs
- Partnering can provide one of the best opportunities for a route by which civil engineering products such as pre-cast concrete components, can be sold to customers on grounds other than 'upfront costs'

The transition of the industry from competitive, price driven and adversarial to quality driven, collaborative and social as in the Japanese experience is not destined to be without obstacles, however.

2.5 Barriers to Effective Partnering

Although similarities can be drawn between construction and the automotive industry, there are numerous peculiarities to the construction industry that might hinder the implementation of partnering. Partnering represents a management approach, which is fundamentally different to how business has been conducted in the past. In contrast, partnering in manufacturing was a term used to describe the manner in which business had developed and been conducted successfully between organisations (Lamming, 1993). Academics and commentators are reflecting upon past business practices in the manufacturing industry and are identifying previously implemented and successful approaches as 'partnering'. The question of how transferable these lessons from manufacturing are must be addressed. As mentioned, it is perhaps dangerous to presume that the successful implementation of a management philosophy in one industry can be integrated with the same outcomes into another different industry.

Partnering now has had a few years to develop in the UK industry and although many see or have experienced the benefits of the approach there is still scepticism, which can act as a barrier to its effective use (Baldock, 2000). Colin Busby chairman and CEO of Kier believes that:

“Contractors are in favour of partnering, but professionals are sceptical.

They think it is a threat to their livelihoods¹⁶”

whilst Stuart Green (Professor of Construction Management, Reading University) states:

“despite the rhetoric of trust and team working, there is inequality in partnering agreements¹⁷”.

Michael Manser of Manser and Partners highlights some of the fears that consultants have of partnering relationships. He says they down grade services because the ethos of value engineering the supply chain does not distinguish between the provision of intellectual services and the subcontracting of products (In Baldock, 2000).

John Wright, chairman of the CIC’s partnering task force says that partnering is not being practiced properly due to the massive confusion about what is involved. Colin Harding chairman of George & Harding says:

“our problem is finding sub-contractors to partner with. They want jobs

on a plate and to add 10%. But they don’t want to talk about serious

open book accounting and real partnering¹⁸”.

¹⁶ In Baldock ((2000)

¹⁷ In Baldock (2000)

¹⁸ In Baldock (2000)

Paul Morrell senior partner of QS Davis Langdon & Everest says partnering firms have to prove they are adding value.

“If you are going to come to the table early, you represent a cost, so you have to have a way of repaying it by adding value pre-construction, through input to design and understanding of the clients purpose”¹⁹”.

Parisotti (2000), discussed the potential problems that manifest themselves through the use of undeveloped partnering contracts that stipulate radical terms such as open book policies, the deletion of liquidated damages and shares of profit and loss. She is sceptical regarding them working in practice especially the shared profit and loss, which could see the project team including the client sharing the costs of rectifying problems. She states:

“it would involve a radical change of policy for insurers to pay out on the basis of a pre-agreed allocation to say nothing of the difficulty in assessing premiums in relation to work of unknown third parties.”

2.6 Cultural Resistance

The culture of the UK construction industry has been shown to make it difficult to apply the partnering concept, largely due to the British political and economic culture where financial institutions are acutely focused on high level-short term profit.

¹⁹ In Baldock (2000)

Private interests and the market are celebrated as the only efficient and responsive forms of organisation, while notions of co-operation, common interests or public spirit are dismissed as bureaucratic, interventionist or socialist' (Ball 1988).

The desire to change culture is present in certain quarters yet the operational realities of this create massive problems. How does an economically maligned industry set about fundamental changes in the way it conducts its business in the face of ever-greater demands from its client base?

Both the diversity of project types and the temporary nature of the industry can impede the development of inter-organisational communication and understanding. Furthermore the fragmentation of organisations which traditionally perform rigorously defined professional functions for example Architecture, engineering services, fabrication, quantity surveying, etc, enhances the potential for conflict. Individual members undergo an inherently isolated education regarding interaction with other disciplines and their requirements. As a consequence different professions often view projects from different perspectives than members of other disciplinary groups, especially design and production disciplines. Most have different objectives, incentives and are motivated by different factors. This lack of cultural symbiosis is a root cause for adversarialism in construction and might suggest why such complex and comprehensive contracts between project contributors are required. These problems perhaps manifest themselves most predominantly between design and production interfaces where the problems associated with poor communication and differing objectives and incentives are well documented.

Latham (1994), in his review of the construction industry, identifies specific requirements for changes in terms of relationships and working

practices. Successfully dealing with the above drivers is further complicated by problems with existing ideological / philosophical views and cultural differences between stakeholders in the construction process. For example, clients, contractors and designers are all working within particular boundaries or parameters laid down by the 'norms' and values of their particular profession. This results in both commonalities and differences, which need to be understood if a construction project is to be successful.

From the above, it is worth isolating the 'human factor' and the desire to create a new working culture within the industry. Individuals and organisations are recognising that they no longer wish to conduct business in what is perceived to be the traditional, 'adversarial' manner in which construction has historically operated. Profit levels can be increased for all parties and litigation costs reduced by developing more co-operative working strategies and 'partnering' arrangements. Partnering is about *relationships* and these can be based upon project roles and responsibilities or 'function', contractual arrangements or personal interactions. True partnering in the spirit of the Japanese approach can consider all types of relationship. Whatever the source of the relationship this is a critical element of successful long-term business relationships.

One can assume that the development of effective organisational structures in construction projects is no less important to the eventual project outcome than in any other industry sector. However the numerous barriers mentioned earlier make them notoriously difficult to overcome. There have over many years been different attempts to overcome these barriers, and many previously discussed approaches dating from for example, the behavioural school (McGregor, 1960; Buckley, 1968; Katz & Kahn, 1978), have much in common with currently recommended partnering principles.

2.6.1 Conflict in Construction

The term conflict occurs frequently in this thesis and it is important to explore the fundamental reasons why conflict exists and its various incarnations. The reduction of conflict has been identified as vital for successful collaborative strategies (Handy, 1993). The existence of conflict in construction projects is well documented (Baden-Hellard, 1995; NEDC, 1991; Stipanowich & Matthews, 1997). However, identifying and addressing conflict within a whole project is time consuming and complex, as conflict can occur at almost any level, from an individual or group within an organisation through to differences between organisations themselves.

2.6.1.1 Symptoms

It is important to summarise current theories about the symptoms of conflict before we can fully appreciate the causes. Handy (1993) suggests that six major symptoms contribute to conflict. These are as follows:

1. Poor communications both vertically and laterally,
One company purchases a significant minority shareholding of another for such reasons as to influence board policy, to facilitate greater collaboration, to safeguard strategic trading relationships, to benefit from helping the investing company with a new line of business, stepping stone to acquisition, etc. undertaken in order to improve this in the industry especially in relation to IT. Computer Integrated Construction (CIC) is now being promoted and introduced into projects.

2. Inter group hostility and jealousy. Again this is quite common in the construction industry, due in part to a fragmented education system.
3. Inter personal friction. Relationships between individuals from different groups can be poor and unproductive.
4. Escalation of arbitration. An increasing number of intergroup conflicts are passed up to the cross over point of arbitration. This point becomes progressively higher as more senior levels in the organisational hierarchy defend their own parties and colleagues. Problems can be blown out of all proportion.
5. Rules, regulation, norms and myths are proliferated. The process of taking action is slowed by regulations, which can lead to disagreement and conflict.
6. Inefficiency leading to low morale and frustration. These symptoms can be found in nearly all organisations and proliferate as a direct consequence of competition turning to conflict. These are the areas, which provide scope for analysis and improvement in order to suppress conflict in an organisation.

2.6.2 The Causes of Conflict

Handy (1993) suggests that there are two fundamental issues when attempting to identify the causes for conflict within an organisation. These are goals and ideologies and territory.

2.6.2.1 Goals and Ideologies

When groups interact with varying sets of goals, priorities and standards there is likely to be conflict. Ideology is described as a set of beliefs about the way to behave, about standards and values (Abrahamson, 1989). Ideological differences include flexibility versus stability, organisation goals or societal needs, short-run versus long run. It is also important to realise that individuals and groups with a power orientation will have different goals and ideologies from those with a role orientation.

According to Handy (1993) friction between these goals and ideologies, which stimulate conflict, can occur when the following conditions arise:

- a. Formal objectives overlap
- b. Role definitions overlap
- c. Contractual relationship is unclear
- d. Roles are simultaneous
- e. There are concealed objectives

2.6.2.2 Territory

It has been proposed that the animal desire to keep control of its territory or to acquire new territories can be applied to society (Egan, 1998) and more distinctly organisation (Handy, 1993). In this proposition it is suggested that territory is perceived psychologically rather than physically and that territory within an organisation is identified by primarily the job and deed that a particular group or individual undertake. If more than one deed is undertaken then the group or individual will acquire territory that stake a claim more forcefully than the others do. The boundaries for territory range from 'physical' such as screens, offices, 'procedural' for example through committee memberships and finally

‘social’ in the form of friendships, and groupings. Once acquired its occupants will then normally protect the territory. This can cause conflict in a number of ways.

- Violation of territory
- Overcrowding of territory
- Jealousy with regard to territory

2.6.3 Summary

This sub section has attempted to briefly illustrate the major forms of conflict that can occur in the construction industry as a whole. It is apparent that conflict is both complex and plentiful, ranging from individuals and groups in sub organisations through to conflicts between the major contributors and disciplines that are inherent to construction projects. (Hellard, 1995; NEDC, 1991; Stipanowich & Mathews, 1997). It is also important to stress that relationships will vary within any given project, depending on the contract agreed, and there are of course many different types of these.

Construction projects normally consist of unfamiliar teams, and the projects themselves are, often relatively short. This means that often relationships do not fully develop in any one projects lifetime and consequently communication, respect, understanding and trust between those involved is often lacking, resulting in conflicts of the type outlined. Partnering in essence is attempting to remove conflict from collaborative agreements and it is therefore perhaps prudent for partnering facilitators and strategists to be aware of the various forms of conflict that can manifest between participants.

2.7 Alternative Dispute Resolution (ADR)

Conflict is therefore inherent in the construction industry and there are now a multitude of different methods for overcoming the disputes that frequently arise.

ADR originated in the US, with the ADR lobby emerging in the mid 1970's and provided a voluntary, non-binding alternative to what had long been a considered an inefficient and costly litigation system.

In the UK as in the US some of the main problems of the traditional system are:

- Late settlement of disputes
- Litigation results uncertain, and appeals frequent
- Loss of control of resolution procedure by parties
- Relationships between parties often adversely affected
- Time consuming
- Likelihood of delays to programme
- Can be very expensive

Litigation and arbitration essentially involve apportionment of liability for a dispute by a judge or an arbiter, the decision being based on the case presented. Although arbitration offers a more flexible and confidential approach than litigation, both involve a third party (judge or adjudicator) imposing a binding solution on the parties. (Smith, 1995).

ADR aims to avoid litigation by parties voluntarily taking control of the dispute and attempting to find a settlement acceptable to both parties and in the best interests of the project. An independent third party, who does

not have a judgmental role, will act as a neutral facilitator, his primary role being to help parties resolve the dispute themselves. If a successful solution is found this outcome can be recorded in a legally binding form. Importantly, by utilising such a consensual approach, relationships are far less likely to be harmed than when parties utilise adjudicative method such as arbitration or litigation. In some instances the process of developing a mutually acceptable solution, can actually improve the relations between companies. Often as part of the ADR settlement a new business arrangement may be included (CII 1993).

There are four main types of ADR:

1. Mediation
2. Conciliation
3. Mini trial
4. Early Expert Evaluation

The most commonly used of these are mediation and the mini trial.

Mediation: This is a voluntary and private process in which the parties select a neutral party to act as independent mediator. The mediator will help the parties reach an agreed settlement. It is important that those involved with the mediation have the authority to negotiate a settlement. The choice of mediator will depend on the type of dispute in question. The mediation can take the form of a meeting between the parties and the mediator, where the issues for resolution are decided upon and informal presentations given. A series of ‘caucuses’ can then follow in which open discussion about the merits and disadvantages of each case can be held with the mediator ensuring each party focuses on their underlying interest. (CII 1993)

The success of this process depends very much upon the quality of the mediator. Conciliation is also frequently referred to. This is essentially the same as mediation the difference being that in the event that a solution cannot be found the mediator (or conciliator) will automatically produce a recommendation for settlement whereas in mediation the mediator will not unless expressly asked to so.

The Mini Trial: The mini trial is sometimes known as the Supervised Settlement Procedure or Executive Tribunal. This private, consensual process uses a senior executive from each party and a neutral chairman, who will hear from each side about their case. Those involved should not have direct involvement in the dispute and in mediation they need to be senior enough to authorise a solution. The neutral chairman will advise and give objective views on matters of fact and law as appropriate. (CII 1993)

Prior to the case limited information will be made available to the other party in order to define issues. Witnesses and experts can be called if required. Presentations will be made to the panel after which the senior management representatives and adviser will attempt to settle the dispute. If settlement is not reached immediately after the presentations the parties might ask the adviser to provide an opinion on the probable outcome of litigation. Often this will convince parties to continue discussions.

Early Expert Evaluation: This process requires that a neutral expert be appointed who is responsible for inquiring into specific aspects of the dispute, culminating the production of an independent and non-binding report. The report can then be used by the parties to consider the facts, positions and viewpoints of the parties when negotiating a settlement.

The ADR procedure is particularly well suited to claims in the construction industry. Companies frequently have on going relationships, which need not be affected by ADR. Also construction claims frequently involve time extensions, losses and expenses, which need to be documented in detail and proved in legal proceedings. The large number of participants having contractual relationships with different parties often makes the issue of identifying responsibility a very difficult one; hence claims can be lengthy, complex and very costly. Multi party disputes can be dealt with during the flexibility of the mediation or mini trial process. It is increasingly popular for parties to agree a procedure for resolving project disputes. This is a necessary requirement of partnering.

2.8 Literature Review Summary

The literature review has undertaken an in depth study of both the attitudes and experiences of partnering in manufacturing and in construction. The literature referring to partnering in manufacturing illustrates that there are numerous examples of successful partnering in other industry sectors such as the automotive sector and that these partnering approaches utilise, in many instances, more rigorous strategies for both designing and implementing partnering than their construction counterparts. These are discussed in the Discussion Section 2.1.13 of this Chapter.

The review of literature referring to partnering in Construction revealed that there are many potential benefits to implementing partnering in construction. However the review also revealed a less clearly defined approach to partnering, far more ambiguity as to what partnering is and how it should be implemented. It also identified numerous barriers to its effective implementation in construction.

Numerous partnering definitions have been presented in this Chapter. It is the intention of the author not to stipulate a precise definition until the Conclusion Chapter, when all of the research learning can be considered and incorporated. However it is worth stating at this stage that the researcher believes the WG12 (1997) definition, which describes partnering as a 'rigorous management approach', to be the construction definition most in tune with the manufacturing view of partnering which was discussed in section 2.1.

The review suggests that partnering in construction was less refined and developed than its manufacturing counterpart, and that arrangements are often based more on relationships between individuals than long term strategy. Two approaches can therefore be distinguished as described by the Figure 2, which represents the researchers view of the two key approaches to partnering arising out of the literature review.

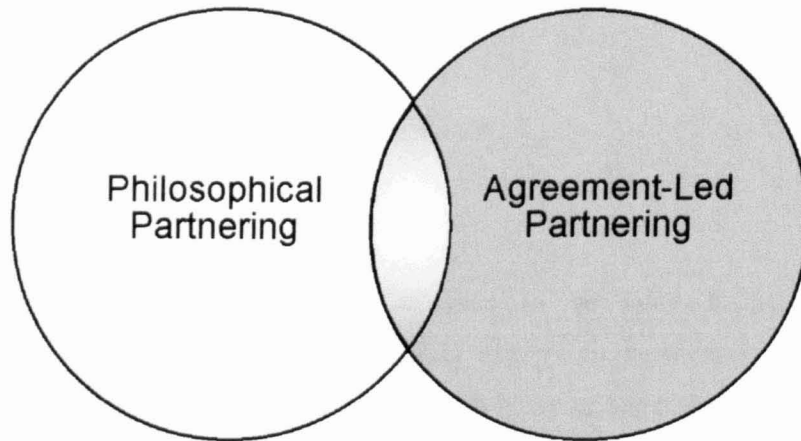


Figure 2: Researchers view of two approaches to partnering

2.8.1 Philosophical Partnering Relationships

These relationships appear to have the following facets:

- a) reliance on past-experience at senior level of the ways of establishing and keeping customers;
- b) the selection of partners for projects through relationships (often personal);
- c) the application of aspects of formal partnering using teams, team building, and superior communication; and could be characterised by practices such as, shared vision, risk sharing and/or cost sharing between partners.

2.8.2 Agreement-Led Partnering

This method developed as a result of management learning and driven by a prime emphasis on quality and cost; characterised by the following facets:

- a) formal selection;
- b) formal partnering agreements;
- c) application of partnering activities; and
- d) risk allocation and cost-based contracts.

Agreement led partnering can be seen to be more formal than Philosophical. However this can utilise aspects of partnering such as identifying shared goals or sharing risk. It is however suggested that it will be far more easy to document and communicate an agreement-led arrangement than a philosophical one which can be inherently based on personal relationships. Such relationships can introduce an unknown element into a partnering arrangement as relationships can change quickly and people come and go from companies with great regularity, even at senior management level. Figure 2 also shows that the two methods can co-exist which can introduce further instabilities into an arrangement. For

example if formal procedures are in place by certain senior managers with a strong personal relationship disagree and do not drive the procedures forward then it is unlikely they will have a positive impact on the project. Successful partnering according to the manufacturing cases would seem to require the initiative to be clearly documented and communicated to the team and committed and driven by senior management.

2.8.3 General Observations

From the review of partnering in Manufacturing and Construction it is evident that there are some notable differences in the way partnering is both perceived and implemented. Generally at this stage we can surmise that partnering in manufacturing is more formal than is the norm in construction. The more successful approaches as described by Lamming (1993) for example also demonstrate a more strategic approach to partnering which is implemented early in the project process or lifecycle and which is also effectively communicated using more clearly defined teams and champions.

We can therefore suggest that in order for stakeholders to be able to improve the performance of the projects by utilising partnering they must undertake two fundamental tasks, these being:

1. To develop and agree a partnering strategy for the project or arrangement prior to its commencement.
2. To communicate this strategy to the project participants and work within its framework in order to achieve the partnering objectives.

The primary research undertaken for this Thesis will, in addition to investigating best practice principles and procedures, explore the degree to

which these general factors exist in the approaches to partnering described by the case studies and surveys.

The key considerations for effective partnering as revealed through the Literature Study are summarised in the following table²⁰.

²⁰ These are not listed in order of priority.

5.2	Considerations for Effective Partnering
1	Shared capital or financial ties can secure relationships ⁷
2	Specialist abilities and skills of suppliers need to be recognised ⁷
3	Supplier Partners need to take on more responsibility ²¹
4	Customers and suppliers need to be committed ²²
5	Recognition that partnering needs to be managed ²³
6	Recognition that partnering needs to be strategically planned ²⁴
7	Long Term relationships are beneficial ²⁵
8	Risk needs to be clearly allocated ²⁶
9	Commitment to Continuous Improvement ²⁷
10	Dispute resolution mechanisms are required ²⁸
11	Shared objectives need to be agreed up front ²⁹

Table 5: Principle considerations for effective partnering

²¹ Section 2.1.6

²² Section 2.1.11

²³ Section 2.1.12 (Collaboration Management)

²⁴ Section 2.2.4 (Sillars & Khangri, 1997)

²⁵ Section 2.1.1, 2.1.11 Partnership Sourcing, 2.2.2 (Nam & Tatum, 1992), 2.2.5, 2.2.8 Crawley & Karim (1995), 2.2.11, 2.2.16.2 (Egan Para 67)

²⁶ Section 2.2.9, 2.3 (Point 5)

²⁷ Section 2.1.5, 2.2.9, 2.2.13 (NEDC 1991), 2.4.2

²⁸ Section 2.2.9, 2.7

²⁹ Section 2.2.9, 2.2.14 (Constructing the Team, page 37 (Latham, 1994)), 2.2.8 (NEDC, 1991), 2.2.9 (NEDC, 1991), 2.3 (R.J Smith, 1996), 2.6

Chapter 3: Research Methodology

3 Introduction

This Chapter outlines the aims and objectives of the thesis and then provides a detailed description of the methodological approach employed, together with a description and critical appraisal of the chosen research method and constituent research styles. It also describes the data collection and data analysis techniques utilised. The Chapter Map is shown below.

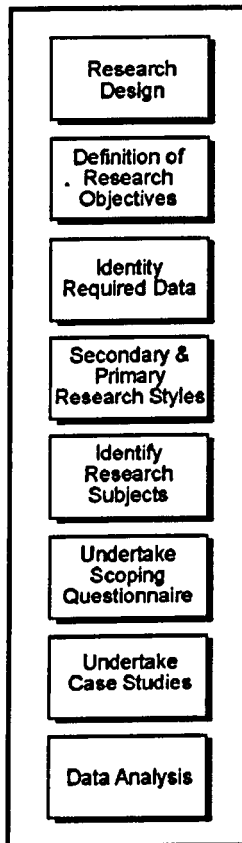


Figure 3: Chapter map for research methodology section

3.1 Research Design

A clear research method is crucial to a well-structured thesis. Research methodology refers to the principles and procedures of logical thought processes, which are applied to a scientific investigation. Method concerns the techniques, which are available, and those, which are actually employed on a research project (Fellows & Liu, 1997). A typical research framework might consist of the following stages.

- Literature review
- Define Objectives and build Hypotheses
- Choice of research instrument
- Primary Data Collection
- Data Analysis
- Reporting

Figure 3b illustrates the research strategy adopted for this thesis which is an open-ended research approach involving the discovery of theory from data, which has been collected through case studies and surveys. This approach can be described by the *grounded theory* (Glaser & Strauss, 1967), which requires the gathering of data from observation of the sample and an examination of the data from the perspective of the issues to be investigated. The approach seeks to categorise the data for which the researcher must be rigorous and highly objective and avoid bias (Fellows & Liu, 1997). The technique of *analytical induction* has also been employed which is a process of iteration and evaluation and seeks to develop potential relationships and explanations between the issues under investigation. Further cases and samples can be investigated to assess how well these explanations apply. These approaches have been employed in order to identify the key partnering principles and their activities and inputs, which form the constituent elements of the partnering processes and which represent the main output of this research.

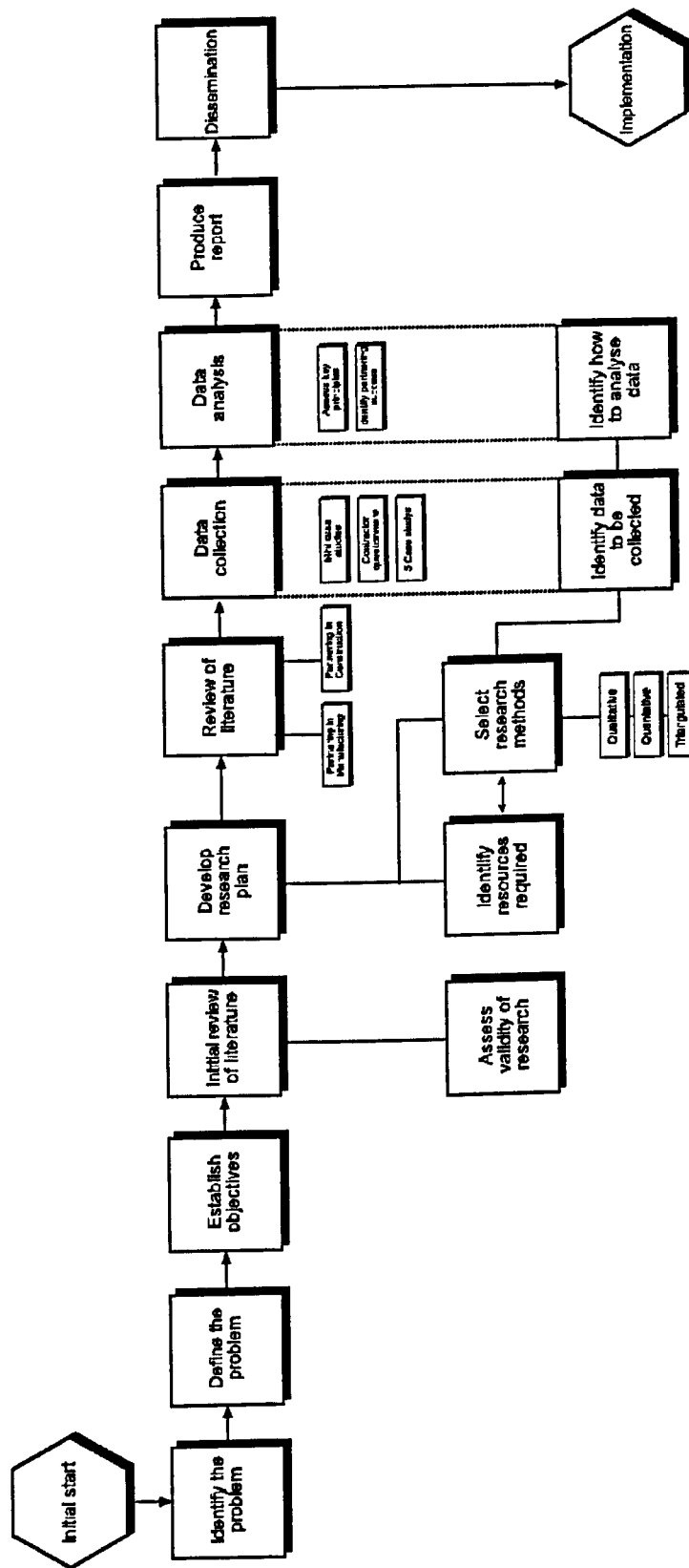


Fig 3b: Research Process for Thesis

Based on suggested construction management research process (SERC 1982) in Fellows & Liu (1997).

3.1.1 Definition of Research Objectives

The initial stage in the research methodology is to define the research objectives. The literature review Chapter revealed that although partnering is becoming increasingly popular there is little precedent of successful partnering in construction. It was also revealed that there is little documentation, which defines how such strategies should be developed and implemented.

The objectives of the thesis are:

- To identify key criteria for effective partnering in other sectors where partnering has been successfully used
- To analyse the design and operation of partnership arrangements in construction, and to identify the criteria upon which successful partnering depends
- To design and validate a set of long term and Project Specific Partnering processes to support development and implementation of formal partnering arrangements

3.1.2 Identity Required Data

The success of the research largely depends on the precise identification and collection, in an auditable way, of the specific data required to meet the research objectives. It is important to consider the research area and identify any peculiarities, which may adversely affect the validity of the data gathered, and the choice of research method.

As discussed in Section 2.2 construction projects have complex organisations. The more complex these human organisations the more

difficult it is to identify simple cause and effects. Also, because of the uniqueness of most construction projects, any simple cause and effects identified may not be valid due to the fact that circumstances will not be the same from one project to the next (March & Simon, 1993). The chosen methodology considers this difficulty by adopting a variety of research methods both qualitative and quantitative. The research has also sought to consider the characteristics of each specific project organisation in order to identify key characteristics of each project.

In order to reach the research objectives the data required broadly consists of the following.

Secondary data literature

- Key partnering criteria- manufacturing best practice
- Key partnering criteria- construction best practice
- Perceived benefits of partnering
- Perceived problems of partnering

Primary data

- Assessment of actual projects to test the validity of the above
- Identification of missing elements
- Critical aspects of developing a partnering strategy
 - obstacles
- Critical aspects of implementing a partnering strategy
 - obstacles

3.1.3 Selection of Data Collection Method

Research methods and styles are not mutually exclusive to each other and often only one or a limited number of approaches can be utilised due to resource constraints. The methods of data collection impact on the analyses which may be executed and hence, the results, conclusions, values and validity of the study (Fellow & Liu, 1997).

There are two main approaches to research, which may adopt common research styles. These are quantitative and qualitative approaches.

3.1.3.1 Quantitative Approaches

Fellow & Liu (1997) provide a succinct definition of quantitative approaches stating

“Quantitative approaches seek to gather factual data and to study relationships between facts and how such facts and relationships accord with theories and findings of any research executed previously (Literature). Scientific techniques are used to obtain measurements-quantified data. Analyses of the data yield quantified results and conclusions derived from evaluation of the results in the light of theory and literature”

3.1.3.2 Qualitative Approaches

Qualitative approaches seek to gain insights and to understand people's perceptions of the world, whether as individuals or groups. The beliefs, understandings, opinions, views and experiences of people are investigated. The data gathered may be unstructured at least in its raw

form, but will tend to be detailed and hence 'rich' in content and scope (Fellow & Liu, 1997)

Fellow & Liu (1997) further point out the analysis of such data is often quite difficult and time consuming requiring filtering and sorting, the transcribing of interviews and analysing the content of conversations. The fact that normally the researcher is more intimately involved with the work and that a number of external environmental variables can impact on the work has led to the objectivity of qualitative research being sometimes criticised.

3.1.4 Secondary Research

Kotler (1996) distinguishes secondary data and primary data as:

“Secondary data consists of information that already exists somewhere having been collected for another purpose. Primary data consists of original information for the specific purpose at hand.”

The main advantage of secondary data is that it provides a basis to develop ideas and hypotheses and the use of secondary data can provide a comparison by which primary data can be interpreted more appropriately.

Secondary research for the thesis was split into two main areas.

3.1.4.1 Manufacturing literature review

A review of partnering and collaborative strategy in manufacturing in order to identify key criteria for effective partnering arrangements.

3.1.4.2 Construction literature review

A review of partnering in the construction in order to obtain definitions and identify key principles and criteria for effective implementation. This literature review also included a section on the particular aspects and complexities of the construction industry that might act as barriers to the partnering approach.

3.1.5 Primary Research Styles

As Yin (1994) explains there a variety of different research strategies to choose from. Yin (1994) concludes that every strategy can be used for exploratory, explanatory or descriptive purposes. The type of data collection method to be used is dependent on:

1. The extent to which the research focuses on contemporary as opposed to historical events
2. The type of research question posed
3. The level of control an investigator has over actual behavioural events

Strategy	Form of question	Control over behavioural events?	Focus on contemporary events?
Experiment	How, why	Yes	Yes
Survey	Who, what, where, How many, how much	No	Yes
Archival Analysis	Who, what, where, how many, how much	No	Yes/No
History	How, why	No	No
Case Study	How, why	No	Yes

Table 6: Different research strategies, Yin (1994)

Yin (1994) explains that the application of these strategies depends of the type of investigation and in some cases all five might be relevant. In others just one strategy will be more suitable. The research objectives for this thesis require the investigation of historical and contemporary data in order to define best practice criteria and subsequently the assessment of specific projects against these criteria.

As Biemans (1990) states:

"Different research methods can be used in addressing a specific research problem, the choice of methodology depends mainly on the characteristics of the problem"

Pettigrew (1995) discussed the triangulated methodology, which gathers different types of data that can be used as cross checks. The approach draws on the strengths of various data collection methods. The benefit is to prevent bias that can arise from using one single technique (Pettigrew, 1995).

"Triangulated research study employs two or more research techniques qualitative and quantitative approaches may be employed to reduce or eliminate disadvantages of each individual approach whilst gaining the advantages of each, and of the combination of a multidimensional view of the subject gained through synergy". (Fellows & Liu, 1997).

The research for this Thesis will therefore require more than one technique in order to obtain both quantitative data regarding benefits and performance improvement as well as more qualitative data regarding

people's views and experiences of the partnering approach. The following were therefore utilised:

- Questionnaire (Scoping)
- Case Study (Historical)
- Case Studies (Contemporary)
- Observation

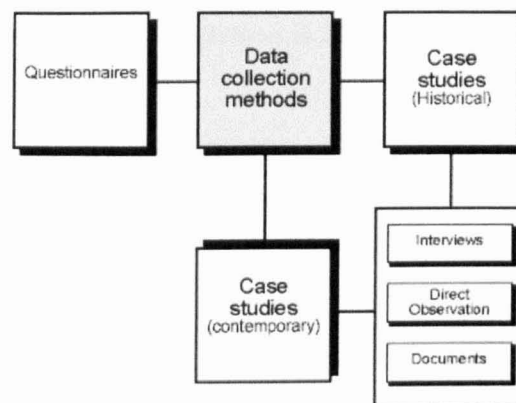
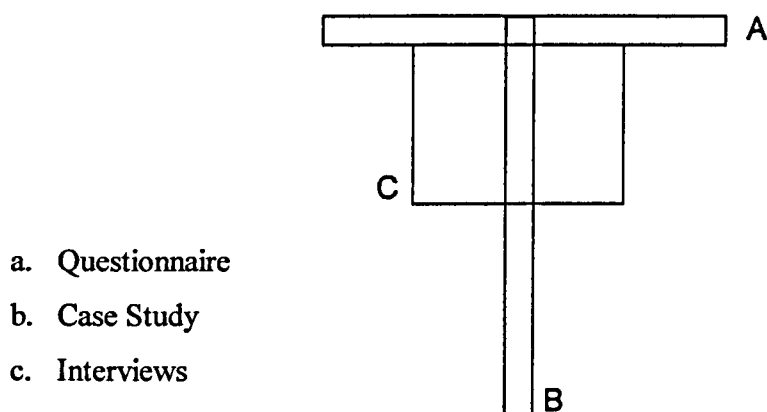


Figure 4: Primary research techniques utilised for thesis

Fellows and Liu (1997) argue that there is a finite amount of resources available for carrying out the fieldwork. The choice of research method is important to ensure the research is undertaken as efficiently as possible in the time allowed.

Fellows and Liu (1997) propose that the appropriate choice of research method or combination thereof is influenced by the scope and depth required.



*Figure 5: Breadth v. depth in 'question based studies'
(Fellows & Liu, 1997)*

The research undertaken in this thesis uses a combination of all three-survey techniques. Although this is more time consuming it was felt that this was necessary in order to obtain a set of results that are rigorous enough to incorporate into the resultant best practice processes.

3.1.5.1 Case Studies

Hamels, in Yin (1994) argues that the case study is of great use in the qualitative research method, as its helps effectively *describe, understand* and *explain*. Yin (1994) describes the case study methodology as

“an empirical inquiry that investigates a contemporary phenomena within its real life context, when the boundaries between phenomena and context are not clearly evident and in which multiple sources of evidence are used”.

A case study is useful when describing complex relationships between a number of variables and in building up theoretical frameworks. Yin (1989) comments that:

“case study research consists of detailed investigation, often with data collected over a period of time from one or more organisations, or groups within the organisation with a view to providing an analysis of the context and processes involved in the phenomena under study”.

Case studies are open to criticism regarding rigour and the results of such research are dependent on the researchers ability to carry out a quality investigation. As Hoaglin et al (1982) in Cassell and Symon (1994) argues:

“Most people feel they can prepare a case study and really all of us believe we can understand one. Since neither is well founded, the case study receives a good deal of appropriation of which it does not deserve”.

Yin (1994) supports the view that case studies are more challenging than common belief would suggest stating:

“the demands of the case study on a persons intellect, ego and emotions are far greater than those of any other research strategy. The researcher is also highly dependent on organisations, individuals their honesty and cooperation. Case studies are complex and it takes time to analyse the data and construct learned arguments”.

Single case studies can provide little basis for generalisation (Yin, 1989) and it does not represent a sample. Therefore they are of use when attempting to expand and generalise theories rather than to enumerate frequencies, and do not represent a sample.

When utilised in conjunction with other research methods however the case study can be a powerful approach as it enables researchers to investigate behaviours within their natural context. This is confirmed by Birn et al (1990) who state:

“At its most simple level, qualitative research is all about observing and listening to people as they respond in a carefully constructed environment of enquiry and gaining the understanding and appreciation of their attitudes and behaviours”.

Case studies are also useful when exploring the specific processes, which represent the dynamic properties of an organisation or interrelationships between multiple organisations.

Case studies are therefore a useful tool for the purposes of this research as they can help describe the complex relationships between participants in a partnering arrangement as well as capture accurate opinions, attitudes and experiences of participants within a real world situation. In order to avoid the limitations associated with single case studies a range of cases have been chosen ranging from smaller mini case studies which identify lessons learnt and reveal precedent from other industry sectors.

3.1.5.2 Surveys

Surveys work on the basis of statistical sampling often being achieved through interviews or questionnaires. Surveys are normally undertaken for

subject matters that are difficult to study by either direct observation or experimental manipulation (Atkinson et al, 1990). Surveys can also be classified as falling into two types, being the descriptive, enumerative survey which makes inferences about a whole population from a representative sample and has a fact finding function, and the analytical relational survey which is used to examine the differences between things which cannot be simply inferred.

3.1.5.3 Interviews

McCracken (1998) (in Cassell and Symon, 1994) argues that the interview is one of the most powerful methods of qualitative research stating that

“It gives us the opportunity to step into the mind of another person, to see and experience the world as they do themselves”

Well-structured interview technique allows case material to be discussed in confidence and reduces the occurrence of peer group pressure. A well-structured interview allows flexibility but also controls the direction of the interview and because interviews can be more open ended and dynamic a greater depth of understanding well beyond superficial responses can be attained.

According to Cohen and Manion (1989) there are four types of interview:

1. Structured Interviews

The interviewee is presented with a list of prepared questions to answer. Structured interviews are used when the researcher knows exactly what information is needed. The researcher has compiled a list of questions for topics, which he or she will use to conduct the interviews.

2. Unstructured interviews:

The interview is less formal and more like a conversation between the researcher and interviewee. A set of topics or issues may also be covered. There is not a planned structure of questions and topics and the researcher gains preliminary insights into the research subject to guide further stages of the research. Results for this type of interview reveal important issues, which need further study.

3. Non-Directive Interviews: This allows the respondent to express their subjective feelings. Can incorporate the use of open questions.

4. Focused Interview: The interviewer will ask precise questions on a subject, which has previously been studied. The aim is often to understand the respondent's personal opinion.

There are some disadvantages associated with using the interviews to collect data, which need to be considered. The key problem is that of bias such as the interviewee responding in a way that he or she thinks the interviewer wants to hear. This can be very apparent if the interviewee believes that their performance or that of colleagues is being assessed through the research or believe that the responses he or she provide will be seen by their line management. If the case study or research period is long in duration there is a danger that interviewer and interview can become too familiar and that the interviewee provides bias information in order to impress or please the interviewer. However the development of relationships between research team and case study participants can also have benefits as the interviewee might feel they can be more honest with someone they know better.

It is important therefore to emphasize to interviewees that it is vital to be objective and honest when answering and critical to convince them that information will be used in confidence in order to gain their trust from the outset.

3.1.5.4 Questionnaires

Questionnaires consist of questions that can be categorised into two main forms being open or closed. Open questions enable the respondent to answer in full and to whatever extent the respondent wishes. Such questions may be difficult to answer and because of the broadness of the answers they can be difficult to analyse. Postal questionnaires with many open questions can put people off answering them accurately due to the time and effort required to complete them.

Oppenheim (1992) states that careful consideration needs to be given to the design of any questionnaire survey. The questions need to be carefully worded to avoid misinterpretations and double-barrelled questions, long sentences and over taxing respondents memories should be avoided. Questions should also not require extensive data gathering by the respondent.

It is prudent to pilot questionnaires before they are distributed. The piloting will enable the components and structure of the questionnaire to be checked at an academic level and for effective approaches to the analysis of responses to be determined.

Questions concern facts, knowledge and opinion and it is important to appreciate that people memories are not perfect. A certain amount of checking can be undertaken regarding a respondent's knowledge of a subject area and the accuracy of facts provided can be determined. However opinions must be taken at their face value (Fellows & Liu, 1997).

3.1.6 Identify Research Subjects

At the time the research study for this Thesis commenced there were few practical examples of successful partnering arrangements in the UK construction industry. However many recommended partnering principles had been successfully implemented in other industry sectors, most notably the automotive, IT and aerospace industries. It was therefore decided that the study of one or more of these industries would enable an initial assessment of key criteria for successful partnering to be undertaken. The initial work consists of secondary research, which was then followed up with a number of mini case studies with a variety of manufacturing companies. These studies provide valuable background information, which can then be used to produce a more focused and targeted strategy for the primary research activities.

After undertaking the initial literature review of partnering in other industries it was decided that the following mini cases should be undertaken initially.

3.1.6.1 FERODO: A key Automotive Supplier

Ferodo were working within a partnering arrangement that was initiated by FORD and as such were in an ideal position to comment upon its success and workability from their perspective. The case study involved several visits to their HQ and factory and an assessment of the partnering policy documentation and the process with which the partnering was planned and implemented. The key criteria, which constituted this partnering strategy, were also identified.

3.1.6.2 The FI Group: Corporate IT Consultants

The FI group is a company that provides IT services to top 500 companies. A rapidly expanding company their growth requires the introduction of new staff on a regular basis. FI have considerable experience in partnering and often facilitate the transfer of staff from one organisation to their own in order to create new dynamic teams of people working on specific projects. The study provides an opportunity to assess the approach the company adopts in planning and implementing large scale partnering projects, which sometimes run for long periods of time (up to 7 years in some cases).

3.1.6.3 ASDA

This case study provided the opportunity to investigate how a manufacturing giant undertook partnering on its construction projects. ASDA has for sometime undertaken partnering approaches to improve their supply chain management. Due to high demand for new stores and the resultant large scale build programmes, they were in the initial stages of implementing partnering arrangements on their construction projects when the research was undertaken. The partnering was very much driven by ASDA and the views and opinions of some of the partnering contractors were captured. This mini case provided the first case study data on partnering in the construction industry for the thesis and illustrated some interesting differences between partnering in construction and in the other industry sectors.

3.1.6.4 Research subjects for Primary Case Studies

The next stage of research represented the core primary research and utilised two main contractors from the UK construction industry and a

range of clients³⁰. These were Bovis, Amec, Northern Foods, Peel Holdings Plc, Marks & Spencer's and BAA.

Three case studies were undertaken with Bovis who was a keen research partner and who had considerable experience of long term collaboration with a range of companies. Three such relationships were investigated.

3.1.6.5 Case Study 1: BOVIS & Northern Foods

The final Bovis case study was a study of another long-term relationship between Bovis and a key client. A brief history of the relationship is provided and then the project story of the London Colney Distribution Centre (1993-1996) is researched.

3.1.6.6 Case Study 2: BOVIS & The Trafford Centre

BOVIS were also a key player in the Trafford Centre development and were utilising a partnering arrangement on this project. Access was gained at a relatively early stage on the project and the constituent elements of this arrangement were investigated and its success appraised.

3.1.6.7 Case Study 3: BOVIS & Marks & Spencer

This relationship was chosen due to the well-documented history of partnering with Marks and Spencer with whom they had been working for over 75 years.

3.1.6.8 Amec & BAA

The Amec case study was an opportunity to investigate what was being reported in the press as a model partnering arrangement. The researcher was asked to help develop a partnering policy on behalf of Amec Civil Engineering Ltd, which could be used as a framework arrangement for

³⁰ A main contractor survey was also undertaken based on the manufacturing review and initial mini cases. The results of this helped focus and refine the methodology for subsequent research stages.

subsequent projects. The case study reviewed one of the projects that Amec were working on in partnership with BAA. The case study enabled the research so far to culminate in an initial partnering process, which was then reviewed and validated by the Amec board at a workshop event.

3.1.7 Undertaking the Scoping Questionnaire

The scoping questionnaire was undertaken with a range of UK contractors. The sample was random in order to ascertain a snap shot of how many believed they were effectively implementing partnering and how many felt they were not. The sample was taken from a database of 500 companies. 350 questionnaires were sent out and a total of 110 responses were used for analysis. The companies were telephoned in order to identify who was the best person to send the questionnaires too. If the appropriate person could not be identified the personnel department were asked to pass on the questionnaires to senior management dealing with procurement strategy or partnering specifically. The details of each respondent were asked for in the questionnaire.

The questionnaire items were generated through a literature review of partnering in construction and from the aforementioned mini cases and manufacturing review. It addresses the key criteria identified from the secondary research including the following:

- Company background
- Project background
- Project performance
- Communications
- Innovation
- Construction management
- Inter-organisational relationships
- Roles and responsibilities

The full questionnaire is provided in Appendix 2.

3.1.8 Undertaking the Case Studies

As discussed in Section 3.1.5 there is a range of research styles available and several of these were incorporated in the case studies.

Regular interviews were a common method of keeping informed with the team. Progressively as the researcher became more familiar with the project and project participants became more open to the research questioning the regular interview could be added to with telephone conversations and telephone interviews. Regular observation through attendance at project meetings was also a frequently utilised research technique. On later case studies questionnaire surveys and action research techniques were also used.

The process for conduction the interviews was as follows:

- A prepared structured interview agenda
- Tape recording if possible (although some were not happy with this to begin with)
- Written notes of the interview
- Collection of relevant documentation with which the accuracy and validity of the interviewees could be assessed at a later stage
- Observation

As each case study was undertaken the researcher became more familiar with the techniques used and more apt at adjusting the method to suit the particular situation at hand. This is in tune with the overall development of case studies as put forward by Bonoma (1984 in Yin 1994) who suggests there are four stages of understanding that relate to the construction of a case study.

1. The drift stage

An initial stage where the researcher learns concepts, locale and jargon of the phenomena under study as it occurs from the study and begins 'to integrate the priori notions from the literature' (Yin 1994)

2. The design stage

The fleshing out of preliminary 'conceptualisation events'. The early stage in developing a model.

3. The prediction Stage

Testing of initial model through primary data collection

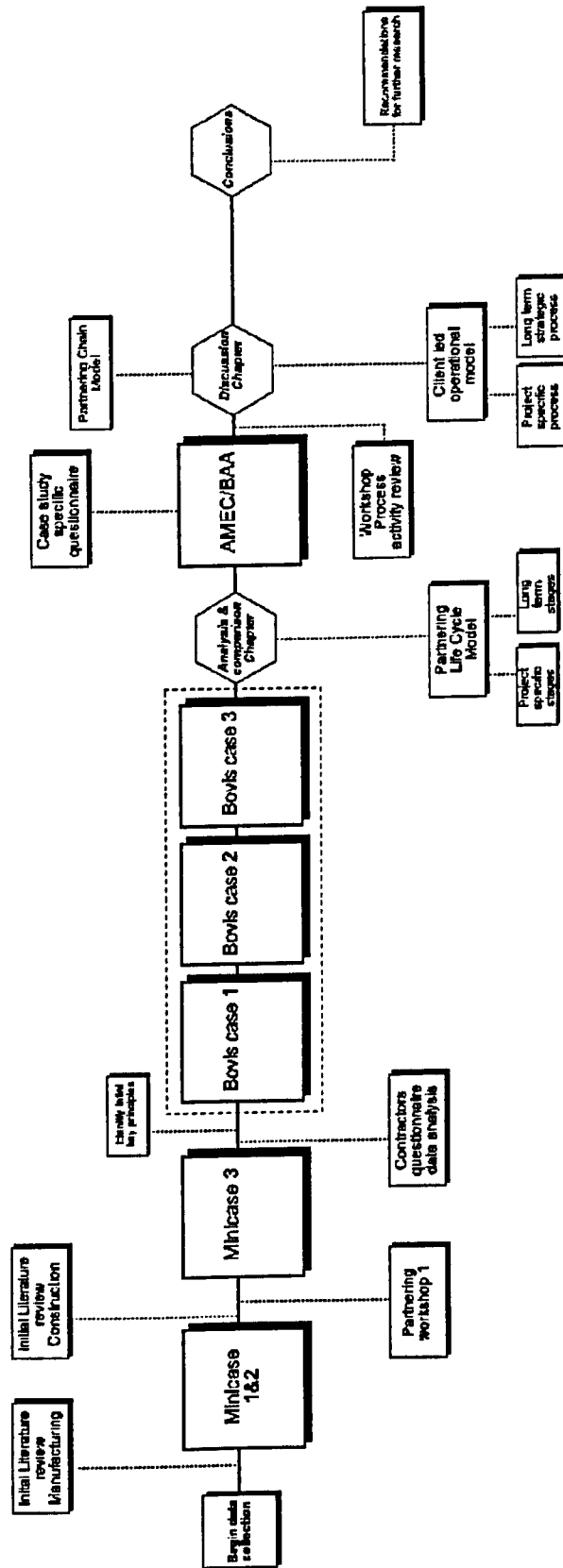
4. The disconfirmation stage

Further testing through analysing results and forming arguments

This process of conceptualisation, design of initial models, its testing and further refinement has been adopted throughout the thesis and is equally true when viewing the overall case study approach. This has been undertaken in order to ensure the validity of the research method. As Gummesson (in Cassell and Symon 1994) argues, to achieve validity the researcher must undertake,

"a continuous process that is integrated with theory and that requires the researcher to continuously assess his assumptions, revise his results, re-test theories and models and reappraise the given limitations that have been set for the study".

Figure 5b illustrates the data collection process and how the case studies are the backbone to the research approach. Updates to literature reviews were undertaken periodically and the questionnaire surveys (carried out either as part of the case studies or as separate surveys) were of great benefit in helping to refine subsequent case studies and to focus more accurately on investigating the required information.



Thesis Data Collection Process

Figure 5b

3.1.9 Data Analysis

As Yin (1989) suggests:

“Data analysis consists of examining, categorising, tabulating or otherwise recombining the evidence”

The purpose of data analysis is to provide information about variables and usually the relationships between them. Hence as research in a topic becomes more extensive quantitative studies may be undertaken in order to yield statistical evidence of relationships and their strengths. Statistics are useful in determining directions of relationships (causalities) when combined with theory and literature (Fellows and Liu 1997). However the function of data analysis is also to provide evidence of relationships and to aid understanding, in a context of management, it is to support decision making- hence the importance of *inference*. Inference is what flows logically from the evidence. (Fellows and Liu 1997). It is important to recognise how valid the inferences are.

“A rule of inference is valid if it can never lead from true premises to a false conclusion” Popper (1989)

Not all research projects yield data, which are suitable for statistical analysis. In many cases only simple manipulation of small sets of data may be required. However no matter what the nature of the data collected, it is appropriate to begin analysis by examining the raw data to search for patterns (Fellows & Liu, 1997). Patterns or relationships may have become evident from literature and theory reviews, and data should be reviewed

with an open mind in order to search for differences between theory and practical behaviours.

Qualitative data can be difficult and time consuming to analyse and needs to be handled in a systematic manner which is on the whole easier to achieve with quantitative data. The analysis of quantitative data has been described as:

“A thoughtful and creative process...involving the need for judgements about data and interaction of brain and material” (Robson, 1993 in Cassell and Symon, 1994).

Many qualitative approaches are not subject to particular analytic techniques with prescribed tests, as is common in quantitative analysis, but instead involve the scrutiny of transcribed texts of discussions, statements, etc. In this way not only is the content analysed but also the linguistic content is considered in order to establish meanings, intentions, interpretations, etc of the individuals concerned.

Content analysis is a simple method that can be used to analyse data. At its most simplistic level it involves determining the main facets of a data set by merely counting the number of times an activity or comment, etc occurs. Care must be taken however as sometimes almost identical behaviours can have different meanings depending on their context and environment.

The research provided two types of data. Questionnaire data and interview/case study reports. All questionnaire data was put into a series of spreadsheets for analysis where the results could also be easily compared

and tabulated. The data underwent rigorous comparison and assessment, however detailed statistical analysis was not deemed appropriate due to sample sizes and the behavioural subject of the questionnaire. The questionnaires were used to identify trends, which could then be explored in more detail in the case studies through interviews, shadowing and observation. As such they were used for fact finding and were not central to the aims of the thesis.

Interviews form a main part of the case study material and the researcher must ensure that they understand what the respondent means, not simply what they say, to in order for accurate representation and interpretation of the data to be achieved.

The interviews were 'semi structured' and clearly defined for each study to enable easy comparison of results. The researcher ensured that all key areas of questioning were covered to the required level of detail.

Detailed notes were taken and tape recordings carried out on all interviews and all transcripts were sent to the respondents to enable them to amend any misunderstandings. The case studies were also drafted at the time of investigation and sent to key respondents for validation (or in the case of the Amec study presented to key participants in person). The process of reporting is one of distillation, focusing on the main findings that are important in arriving at the research aim.

In order to achieve this the researcher has sought to create sub groups and relationships from interpretation of the data collected which have culminated in the summary tables and key partnering principles. This method of analysis is in tune with that recommended by Hammersley and Atkinson (1983) (in Fellows & Liu, 1997) who state:

"The researcher should seek to establish categories, sub groups and relationships between them from the data collected. Such categorisation of data will reduce the number of potential variables, thereby making the data more manageable and 'visible' to assist the detection of patterns and possible dependencies".

The researcher has only reported the most important issues from the interviews, observation and questionnaires, within the main body of this thesis, although a complete account of the research data can be found in Appendix.2.

Chapter 4: Initial Data Collection

4 Introduction

This section describes the case studies and surveys undertaken as part of the initial primary research investigation. It presents the initial mini case studies and then describes the contractor's questionnaire and analyses the data. An in depth account of each of the Bovis case studies is provided in Chapter 5.

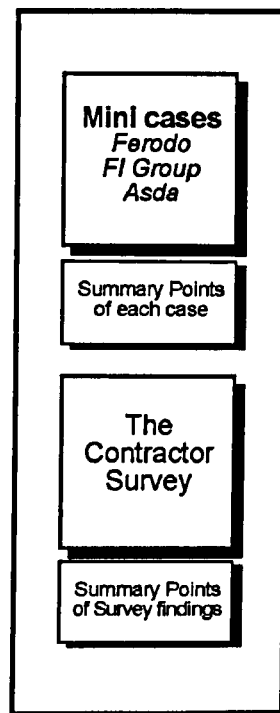


Figure 6: Data collection chapter map

This Chapter presents the case studies and contractor survey and provides a discussion regarding the findings of each.

4.1 Mini Case Studies

The following section outlines the main findings from the mini case studies, which were undertaken in other industry sectors familiar with the partnering philosophy in order to ascertain best practice procedures and key partnering principles required for the development of the partnering processes for construction.

At the end of each case study a set of summary points are listed which identify both the key procedures that were successfully implemented and also key 'Caution Points' which identify key areas which according to the case study participants need to be considered for effective partnering. The mini cases were undertaken in a relatively short period of time in order to assess the extent to which the basic principles identified from the literature review were evident and also to identify any new partnering principles.

4.1.1 Mini Case Study Data Collection Method

For each of the mini cases a semi structured interview technique was undertaken with a range of participants. The person most directly associated with the company partnering approach was the first person to be contacted. Partnering documentation was also analysed to identify the company strategy towards partnering along with the key principles advocated by the partnering organisations.

4.2 Mini Case 1: An Automotive Supplier (Ferodo)

4.2.1 Company Background

Ferodo are suppliers of brake discs for the automotive industry with a turnover of £36.5 million. The parent company of Ferodo is T&N whose 1995 turnover amounted to £2,092m. Automotive supply is the most

global business in T&N. Globally the Friction Group turnover of Ferodo amounted £320 million in 1994. Their main areas of business are in the provision of friction materials and assemblies to OEM's, which accounts for about 55% of their total business interest. 30-40% is accounted for by their after market business which supply's components to dealers such as Hanford's, Unipart, Finelist, Motorworld, Charlie Brown. 15-25% of business is in the railway industry supplying braking components also. They describe their main product as complex with numerous suppliers required to make the brake linings. There are 20 different materials used for the final friction material which are made from up to 150 different chemicals with many different formulations. Expenditure on raw materials accounts for £12.5 million annually and constitutes the biggest single item of cost in their products.

They have about 150 suppliers in total. These range from small and quite technically simple companies which mine raw materials through to large organisations that produce synthetic products with added value.

4.2.2 History of Partnering at Ferodo

Ferodo had been interested in partnering and had acquired a DTI 'customer improvement pack'. It tried to follow the guidelines in this and initiated training courses for internal staff. A partnering arrangement was set up between Ferodo and a backing plate manufacturer. On the whole this arrangement proved to be largely unsuccessful and was described as being too formal as it expected open information sharing prematurely. Ferodo saw the importance of developing long-term relationships with suppliers however and in response to this designed and implemented a supplier development programme known as the Continuous Improvement Programme (CIP).

The Japanese provided many of the principles for the development of such a programme. Ferodo supply to a number, of Japanese OEM's. They were told that they needed to be brought up to speed and in order to learn new techniques and approaches Ferodo sent an internal team of managers out to Japan to learn Kaizen. (I.e. the promotion of improvements on a continuing basis). On their return, a major internal assessment of the company's business objectives was undertaken. Such assessments were to become a key requirement of the partnering approach adopted³¹.

Major effort was put into making people aware of what the continuous improvement programme is trying to achieve. This has been successful in that here are 200 separate teams looking at specific problems and all understand what continuous improvement is and that its aim is to reduce long-term costs.

4.2.3 Current Industry Constraints

Ferodo are currently operating in a market, which can be described as cost down. This is best described by the following extract from Fords strategic objectives in 1995³².

- *Ford wants suppliers to freeze prices until end of the Century.*
- *Ford's drive to slash component costs, amounts to a call for suppliers to accept five years of price cuts in real terms. Suppliers could have to absorb compounded cuts of 20% between now and year 2000.*
- *Ford wants suppliers to absorb all price increases on a component, whether caused by inflation or improvements to the product.*

Ford says:

³¹ See Section 4.2.4

³² Provided by Ferodo

"We are not aiming to get into fights with our suppliers - To succeed we have to have a partnership relationship. By being ingenious we simply will not accept cost increases."

To help the suppliers maintain a positive margin Ford will help them to cut manufacturing costs. Ferodo sees the industry as having a cost down culture where costs are passed down the supply chain. Ferodo believe that there is great pressure on the suppliers from vehicle manufacturers, as they continually desire costs to be driven down. The situation is similar further down the supply chain with the first tier suppliers demanding more and more from their second tier suppliers. Ferodo being a second tier supplier to the brake calliper manufacturer have found themselves under increasing pressure to reduce costs whilst maintaining quality. If anything Ferodo describes the relationships as adversarial with their customers. It is not uncommon for the assembler to threaten to take business away from the supplier if standards are not met. The assemblers could be said to co-operate under a 'LOPEZ' management style.

Ferodo aim to achieve less adversarial relationships through supplier Quality Assurance Programmes and continuous improvement.

"The clarification of our dual roles, and an effective Supplier Quality Assurance Programme, will, we are sure, help lead to a long and fruitful relationship between our two companies (Ferodo supply chain manager)".

Ferodo also aim to help the supplier to improve its capability,

“Ferodo shall work with the supplier to avoid conditions which have resulted in unsatisfactory deliveries, to identify appropriate lines of communication for technical, delivery and payment problems, and to achieve a mutually beneficial commercial partnership” (Ferodo Projects Manager).

4.2.4 Ferodo Supplier Assessment Procedure

A critical factor in the success of improvement policies is the attitude and capability of the supplier. It is vital to analyse the supplier to see if it has the potential to meet the expectations of the customer. The Ferodo assessment scheme consists of four distinct sections for which points are awarded following the evaluation by Ferodo quality assurance. The overall rating of a supplier is arrived at by summing the points awarded for each of the individual section in the following way:

Section	% of Rating
Policy & Commitment	10
Advanced Quality Planning	10
Performance	60
Quality System Audit	20
Maximum Achievable	100

Table 7: Supplier assessment ratings
(Ferodo/ Ford Partnering Arrangement)

Policy and Commitment: is to assess the supplier management quality awareness and the commitment to the responsibilities of a supplier in today's quality environment. Quality policy and the commitment to principles of continuous improvement, prevention rather than detection, and zero defects are investigated through a questionnaire. Quality training

and attitude are also evaluated as the supplier's response to the overall supplier assessment report.

Rating calculated as: Points awarded x10 = Rating 50(max)

Advanced Quality Planning: is to assess the efforts of the supplier in implementing the procedures and techniques such as failure Mode and Effects Analysis (FMEA). The questionnaire is used to evaluate the extent to which Advanced Quality Planning forms part of the quality system of the supplier and to assess the effectiveness of its implementation.

Rating calculated as: Points awarded x10 = Rating 30(max)

Performance: the criterion measures the quality performance of the supplier interim's of goods actually delivered too Ferodo. A performance rating figure, calculated from the number of deliveries, the number rejected, requiring rectification or accepted by concession procedures, is reported.

Category	Delivery Status	Value
1	Accepted	1
2	Accepted following concession application by supplier prior to delivery	50
3	Accepted following rectification of rework or through concession procedures after delivery receipt (Ferodo Internal Deviation).	100
4	Rejected and returned to supplier or otherwise disposed	200

Table 8: Performance ratings
(Ferodo/ Ford Partnering Arrangement)

Factor total is calculated as follows: [Cat1] + [Cat2] x 50 + [Cat3] x100 + [Cat4] x200

Then $\frac{101 - \text{Factor Total}}{\text{Total No. of deliveries}} = \text{Performance Points}$

Performance rating for use in the overall assessment rating is calculated as follows:-

Performance points x 60 = Performance rating 100

Points and performance rating are normally established after a 12-month period and reviewed at 12 monthly intervals. For new suppliers a performance rating of 60 will be used in the calculation of the overall supplier assessment rating. However this shall be reviewed following 10 deliveries or six months which ever is sooner.

Quality System Audit: The purpose is to assess the supplier quality system and the degree of compliance with the quality requirements such as document, design and process control inspection, measuring and testing of equipment, quality audits and more. Observations, deficiencies in the system recommendations are recorded as part of the overall assessment report for presentation to the supplier.

Rating is calculated as :

$\frac{\text{points awarded}}{\text{max achievable}} \times 20 = \text{Rating}$

4.2.4.1 *Supplier Grades*

Suppliers are classified in one of the following ways depending upon their overall supplier assessment rating.

<u>Title</u>	<u>Description</u>	<u>Rating</u>
Preferred	A supplier who demonstrates and maintains an exceptionally high level of performance in all assessment criteria.	95-100
Acceptable	A supplier who satisfactorily meets all the assessment criteria through good performance and an effective quality system.	85-95
Marginal	A supplier who has weaknesses in its quality system or performance and has scope for improvement	75-85
Unacceptable	A supplier who has substantial weaknesses in its quality system and performance.	Less than 75

4.2.5 Ferodo Continuous Improvement Programme (CIP)

4.2.5.1 Objective

There are several key objectives of the Continuous Improvement Programme (CIP) as described by Ferodo, which are:

- To broaden the understanding of the supply chain
- To encourage collaborative relationships with key suppliers
- To secure commitment to work together on cost saving ventures
- To encourage and develop a philosophy of continuous Improvement within our supply base.

4.2.5.2 The Supplier Day

The first part of this programme was to identify the top 40 suppliers to Ferodo and arrange for the strategically important suppliers to attend a 'supplier selection day'. Senior management capable of change from operations, quality control and technical departments formed a representative *internal team* for Ferodo. Likewise, a similar spread of high-level staff was expected from the supplier also.

At the supplier day Ferodo's perceptions of the market are explained to the supplier. Also Ferodo's basic expectations of their suppliers are explained. These are:

- Stability of supplier-no disruption
- Stability of price-cost down culture
- Constant quality-No variations
- Responsive to changes in demand
- Regular personnel contact
- Transparency in process and quality
- All of these are taken for granted in the AM industry
- All are expected by Ferodo customers

4.2.5.3 Definition of CIP

Ferodo's CIP is defined to the suppliers as follows:

'CIP is a systematic, data based management tool to drive continuous improvement and increased customer satisfaction'.

It has been developed by Ferodo's OE division and targeted at internal operations. It is therefore a tried and tested programme within Ferodo and is not exclusively for suppliers. By suppliers implementing a programme, which has been developed by the customer a common set of implementation and feedback tools can be utilised which will facilitate greater understanding and communication between the organisations.

The programme has proven valuable where properly implemented and should be a supplier tool to improve internal operations.

Two key aspects are:

- Identifying improvement opportunity
- Effective problem solving

The main idea is that the supplier and the customer share a common set of tools to enable them to understand more easily the performance improvements of each.

4.2.5.4 Waste Reduction

From the Japanese learning experience the importance of waste reduction has been realised. This is now central to the Continuous Improvement Programme.

'Anything other than the minimum amount of equipment, materials, space, information, people and time which are essential to add value to the product'. Toyoda definition of waste

Ferodo concentrate on the following types of waste:

1. Waiting time, e.g. materials delivery, machines to cycle
2. Transportation of materials, product, etc
3. Rejects (errors)
4. Over production
5. Waste motion
6. Processing: using too much material, oil, electricity, too many gloves, etc
7. Inventory: too high stocks of raw materials, work in progress etc, cost, and money

The eighth waste is under-utilised people, skills and capabilities.

As well as the continual aim to reduce wastage another way of improving efficiency is through the why not 100% approach. The old approach was to ask the question, how can I improve this by 100%. The new approach used by Ferodo is to analyse why something is not 100% by identifying: the unplanned stoppages (for example breakdowns =Y%)

The variance to the design cycle time, therefore $AVAILABILITY = 100 - Y\%$

next to identify:

- Change overs
- Rejects
- Waiting time = Z%

therefore $UTILISATION = 100 - Y\% - Z\%$.

4.2.5.5 Team Working

When attempting to solve problems and improve efficiency through waste reduction and or 'why not 100%' techniques a team working approach is used. This consists of the following:

- The site being organised into product based teams
- Multi skilled teams responsible for the whole product when ever possible
- Everyone being encouraged to form problem solving teams

4.2.6 CIP Procedure

After the supplier has been selected using the techniques outlined above and following the supplier day at which the potential of continuous improvement and procedure of implementation is explained , the supplier is asked to go away and think about what they have heard. Ferodo then go to the supplier organisations and ask them how they would contribute to

the CIP programme. Ferodo see the operation / factory. The supplier then undergoes Ferodo's 5 part rating system.

The criteria of each stage are as follows:

1. Communication and Structure

- Communicate the CIP principles in organisation
- Detailed timed action plan
- Effective training established
- Key personnel identified to champion introduction of CIP & monitor progress against implementation plan

2. Identifying Key Performance Measures

- Key measurables identified which impact on achievement of cost and quality
- Method of identifying performance measures established such as brainstorming, benchmarking

3. Establishing CIP Projects

- Performance measures that have been identified in 2. become CIP projects (normally about 5-7)
- Quantifying tools used such as : Trend & Target Graphs
- Pareto analysis
- Action summary
- Problem solving methodology
- Individual monitor

4. Maintenance & Review

- Management review format standardised (i.e. use of quantifying tools are consistent across all measurables)
- Regular management meetings established which involve senior management team
- Actions on each project decided

5. Quantifiable Improvement Establishment

- Producer informs customer of CIP progress and plans
- Evidence in place of quantifiable improvement (covering quality, cost and overheads), regular reviews of measurables and targets by benchmarking)
- Implementation of sub-supplier CIP

4.2.7 Success of CIP

The majority of selected suppliers have, following the supplier day been highly motivated and enthusiastic regarding the CIP and have made serious attempts to introduce it to their organisations. Many suppliers have undertaken their own CIP awareness training. They would return to Ferodo for further discussions and assistance. Although the majority were keen to adopt a CIP some were concerned about the lack of resources to implement it successfully and others were troubled about 'how to get started'. Ferodo have had one supplier who detached himself from CIP and preferred to be judged on traditional values such as quality, service and price and not sharing information about how efficiency in these areas was achieved.

The conclusion drawn from the CIP after five years of implementation is that suppliers who have adopted it have made 'obvious progress' and most have successfully overcome their initial prejudices and fears.

4.2.8 Summary

Ferodo are implementing a range of tools and techniques in order to help satisfy demanding requirements placed by their customers. Collaboration with suppliers has been vital in improving performance on a long-term basis, however it is stressed by the company that this is by no means easy to achieve. Recommended approaches to partnering by the DTI were tried initially but seen as something to aim for rather than as the starting position. Ferodo placed much emphasis on training internal staff and changing the culture of the company before collaborative techniques were tried. Lessons were learnt from Japan and indeed staff were sent over to learn techniques, which was seen as vital in bringing best practice to the company. (Ferodo now publish documents on best practice themselves).

Partnering was seen to be effective between Ferodo and its key suppliers. However when partnering up the supply chain with their customers (OEM's and first tier suppliers) the partnering was seen to be less effective. There was a feeling that unrealistic demands were being paced on them and that true partnering regarding openness of information, sharing of information and particularly assistance in overcoming difficulties were not readily experienced.

4.2.9 Conclusion: Key Factors relating to Partnering

These observations identify a number of key points to consider on partnering. The summary table lists key procedures/ activities that were undertaken by Ferodo and which were thought to be beneficial.

Procedures Effectively Implemented	
1	Rigorous supplier selection procedure ³³
2	Standard classification systems for supplier assessment ³⁴
3	Workshops (contractor day, supplier day) ³⁵
4	Continuous Improvement Procedure (CIP) ³⁶
5	Training of participants
6	Company Culture change (prior to partnering implementation)
7	Helping suppliers to achieve partnering goals
8	Waste reduction procedures ³⁷
9	Documented procedures

The case study revealed a number of caution points that also need to be considered in any partnering relationship.

<i>Caution Points</i>	
1	Partnering up supply chain can be difficult
2	Unrealistic demands can be placed on suppliers
3	Inequality to partnering relationship
4	Training takes time and money
5	Do not expect open information sharing prematurely ³⁸
6	Some suppliers will resist open information sharing ³⁹

³³ Section 4.2.4

³⁴ Section 4.2.4

³⁵ Section 4.2.5.2

³⁶ Section 4.2.6

³⁷ Section 4.2.5.4

³⁸ Section 4.2.2

³⁹ Section 4.2.7

4.3 Mini Case 2: FI Group

4.3.1 Data Collection Method

Semi structured interviews were undertaken with managers from both the FI group and the co-operative bank. A limited amount of documentation was available for analysis.

Importance of partnership sourcing to FI group:

“Partnership is a fundamental business belief. We are building partnerships with customers - the only way to a successful future- and also with all other stakeholders in our business: employees suppliers and investors” Tricia Gardom Group Marketing Director.

4.3.2 Company Background

The FI group is a UK company who provide managed IT services to UK companies in the top 500. Having its beginnings in the 1960's its main service can be described as applications management and production of tailored software to suit specific company needs. They have a 25% market growth rate per annum, which requires the introduction of new staff to FI on a regular basis.

There are three main ways of sourcing, which the company undertakes, these being in-sourcing, outsourcing and co-sourcing. In-sourcing requires experienced company staff being integrated into the FI team requiring relocation to FI sites. Outsourcing requires FI personnel being integrated into the company in question. Co-sourcing is when FI managers manage the resources of both organisations. This is used in order to make major change often requiring a change of services they

provide. FI normally obtain £1Million revenue streams from companies going as high as £8Million.

The FI Group appreciates that businesses need to change quickly in order to compete effectively. 'Reaction times and speed is essential'. The drivers for their customers are that IT plays an important part in their business strategy, however costs must be controlled. Traditionally IT is purchased on what amounts to little more than the approximation of need at a given period of time. The role of FI is to implement more of a strategic and flexible system using 'scalable resources', where you pay for what you use. The aim is to change a fixed supply driven resource to a variable demand driven resource. The analogy preferred by FI is that traditionally the system is one big pipe and every thing is flowed through it. Really what needs to be done is to adjust the size of the pipe. Considering that 85% of IT spend goes on running existing systems there is not as much for new systems development as one might think. Also people are expecting high levels of improvement of up to 20% on such system development projects. Clients have become more demanding even over the last year where they once might have specified something as 'desirable' for example innovation and proactivity they now demand it as part of the service given. In order to respond to these constraints a critical requirement is the formation of teams in order to change the way people work.

4.3.3 Partnering Agreements at FI Group

In order for FI to effectively plan a strategy for a company IT system, the key requirement is the need to understand the company's business drivers. These drivers set the criteria for the partnership.' The question that must be asked is how do we get competitive advantage by working together?

On the basis of the companies' business drivers and its requirements, a partnering agreement is developed. This is formal in nature and in essence constitutes a partnering contract. FI feel that formalising the agreement is important so that every one knows what they are doing and what is expected of them. However the philosophy is to overcome problems if they arise by working through them together and this is reflected in the agreement by the inclusion of exit clauses for both parties. These are written with the expectation that requirements and / or drivers will change over a period of time. There are service level agreements with suppliers and service level agreements with key performance indicators for customers. Often the 'Agreements' with customers are board level and are binding. The emphasis is on each party knowing what they are supposed to be doing. FI Group are often required to work out what goes into the agreement. Objectives must be realistically obtainable.

4.3.3.1 Communication

A key experience of FI is the need for optimal communication. A team or individual, might be working on something that has been given priority only for requirements to change. The individual must be told of this change as soon as possible. Furthermore discussions concerning requirements must take place frequently. 'I could do this or I could do it in this way, if only you had told me'. Such feedback is seen as crucial by FI in order to gain client satisfaction at the end of the project .

4.3.3.2 Monitoring

Monitoring is undertaken through customer satisfaction surveys. These consist of a standard set of questions, which cover set criteria such as:

- What are the priorities

- Future requirements
- Working relationships
- Communication

The relevant individuals and teams are surveyed in order to monitor any changing client requirements and assess any new constraints. People must be aware of changing priorities for them to be able to respond to them. Major reviews come about yearly and there is also participation in independent bench marking which gives trends in the industry and illustrates how FI group is ranked.

FI have the philosophy that the way of adding value to a business is by finding a better way of doing things. This requires a 'change in mindset, and is not just about cost'. Partnerships are crucial to this change in mindset and take time to develop.

'People based services need a more long term and strategic relationship'⁴⁰.

With this attitude the benefits can be identified and monitored as long term and business drivers, rather than answering short term needs.

4.3.3.3 Innovation

Innovation is an important part of any partnership relationship as it is a key deliverable required by the customer and a key incentive for partnering at the outset. There are two main types of innovation as seen by FI that of the product and that of the agreement. Innovation regarding the agreement refers to for example, the innovation of commercial terms such as PFI (Private Finance Initiative). Another example might be the development of agreed terms that require no capital up front which might

⁴⁰ According to the FI Project Manager

allow a client immediate access to certain services. Such an approach will obviously suit certain companies and not others. The importance is for requirements and constraints to be made clear so that tailored agreements can be attained.

Partnering can provide access to knowledge regarding especially performance and review techniques that are not being properly undertaken at present.

4.3.4 Case Example

FI group has undertaken successful partnerships with many companies such as the Co-operative bank. Successful in market areas such as phone banking and gold card issue, the bank has a reputation for innovation and as an organisation willing to embrace change. In 1990 the bank reviewed which non-core activities could be outsourced. IT was seen to be vital but not core and it was felt that other people's investment could be of benefit to the bank. The internal IT operations were better than competent and not immediately obvious candidates for outsourcing however technology and demands were changing rapidly. The bank required an access to new skills and resources on a flexible basis and wished to combine traditional skills with access to new skills. Although there were several reputable systems houses capable of undertaking the job the Co-operative Bank were interested in the relationship FI had established with Whitbread, which was based on a flexible partnership. After in depth negotiations a partnership contract was signed in May 1994 for a period of seven years and a worth of 21.5 million. It required 128 staff to move from the bank to FI group who provided applications design, development maintenance and support services.

4.3.4.1 Benefits

According to the Co-operative Bank there are some obvious and fundamental characteristics, which must be in place before you set up house together. For example - a collaborative style, agreed mutual benefit and a sense of team. According to the Co-operative Bank the transfer of staff provided useful growth in resources and skills and helped FI to better understand the bank and its needs. Close partnership leads to shared vision and values, more aggressive performance improvements, and greater customer satisfaction. Tangible benefits for this partnership included a flexible pricing structure, improvements in the quality of service and productivity savings. All the first year targets were exceeded and performance improvement and quality focus groups set up to drive continuous improvement. The success of staff integration is reinforced by the Chief Executive of FI Group, who says,

“the people who transferred have developed their skills and careers and are now so well integrated that it’s hard to remember life before them. Many have worked for FI on other contracts and some have transferred to other parts of the group, bringing new skills to the companies capabilities”.

4.3.4.2 Potential Problems

The heavily unionised bank and non-unionised FI Group would at first suggest companies of different cultures and that problems could arise when transferring staff. However the FI Group emphasised the importance of employee involvement regarding dividends, profit sharing which echoed the Co-operative Bank’ own values. Induction courses skill and training courses, team building exercises and other measures helped ease the transformation but take time.

4.3.5 Summary

The FI Group therefore has considerable experience in developing formal partnering agreements with customers and suppliers (predominantly customers). They believe formal arrangements are required to enable groups and individuals to recognise what they are supposed to do, however flexibility is built into the agreements with the expectation that requirements will change over time. The ability for individuals to respond to these changing requirements is regarded as an important indicator to the success of the partnering agreement.

Large numbers of staff are often transferred bringing new skills into both the customer's organisation and the FI Group and it is accepted that time and resources will be spent in ensuring such transitions are smooth.

Tangible benefits of such partnering arrangements that have been experienced are:

- Improvements in the quality of service
- Productivity savings
- Flexible pricing structures
- Enhanced understanding of customer organisation
- Additional skills and experience

Monitoring of the agreement in all key areas is undertaken frequently with major reviews on longer relationships occurring annually. Due to the relationship having a formal side to it by way of the 'Agreement' it is easier to measure performance in the key areas defined at the outset and make alterations if required. FI believe that this formality does not dilute the sense of camaraderie on which less formal relationships rely so heavily.

4.3.5.1 *Comments on Partnering in Construction*

The interviewee at FI felt that a possible way forward for construction organisations was to concentrate more on the service they provide than merely the product. Regarding the lead contractors or consultants for example it was suggested that they might in some situations aim at achieving a lower cost of ownership than normal for the client. This would result in the building being designed to fit such criteria more rigorously and comes back to the notion that the organisation must know its client. However for organisations to market the service they provide more than on simply the cost and time of initial construction, the client would have to have other requirements over price. If this is not so then the provision of services becomes based on solely a commercial situation and due to the numbers of competitors for construction services partnering will have less of a place on projects of this type.

4.3.6 **Conclusion: Key Factors relating to Partnering**

The summary table lists key procedures/ activities that were undertaken by FI and the Co-Op Bank and which were thought to be beneficial.

4.3 Procedure Implemented	
1	Agreed mutual benefits ⁴¹
2	Staff transfer enables increase to resource and skill level ⁴²
3	Focus groups to drive CIP ⁴³
4	Formal partnering arrangements advocated ⁴⁴
5	Performance measurement (assisted by 4) ⁴⁵

⁴¹ Section 4.3.4.1

⁴² Section 4.3.4

⁴³ Section 4.3.4.1

⁴⁴ Section 4.3.3

6	Flexibility to allow change over time ⁴⁶
7	Incentives ⁴⁷
8	Rigorous monitoring ⁴⁸
9	Staff training ⁴⁹

Caution points include:

<i>Caution Points</i>	
1	Cultural differences between partners (e.g. Unionised/ non unionised) can lead to conflict ⁵⁰
2	Retraining of staff takes time ⁵¹
3	Partnering should not be just about cost reduction ⁵²
4	Partnering seriously hindered if communication is poor ⁵³

⁴⁵ Section 4.3.3

⁴⁶ Section 4.3.4

⁴⁷ Section 4.3.4

⁴⁸ Section 4.3.3.2

⁴⁹ Section 4.3.4.2

⁵⁰ Section 4.3.4.2

⁵¹ Section 4.3.4.2

⁵² Section 4.3.5.1

⁵³ Section 4.3.3.1

4.4 Mini Case 3: Asda (A Contractors Day)

4.4.1 Data Collection Method

Interviews were undertaken with the Construction Manager who was responsible for the ASDA partnering arrangement. Interviews were also undertaken with the partnering contractors. Two key partnering strategy meetings were attended and a limited amount of documentation was analysed.

4.4.2 Introduction

Asda have adopted partnering policies regarding supply chain management for the retail side of the business. Due to complications that have arisen on the construction and refurbishment of stores (for example reductions in customers after refurbishment due to considerable disruption) the company have restructured and become progressively more involved with the management of such building projects. Store development personnel are responsible for the construction, fitting out and running of new stores and hence the building is seen as a product, integral to the marketing and supply policies of Asda.

The company has over the last couple of years been developing relationships with contractors with an aim to use a select number on a frequent partnering basis. The number of contractors used has reduced from 76 down to 9 at present. Initially the contractors were selected on price and locality. Now the contractors partnered with have developed considerable experience in working with Asda and the strategy is to utilise this personnel effectively on a multitude of Asda construction projects both new build and refurbishment.

Asda are now attempting to reduce construction time of new stores down to a 27-week programme, through its partnering policy. Senior management have had to some extent, bad experiences with contractors in the past and trust is perhaps not at present what it should be. This report summarises the initial meeting in 1996 with the 9 contractors and Asda, (represented by their in house Contracts Development Manager].

The agenda for the meeting was to obtain feedback from the contractors regarding the following:

- Communication between partner contractors
- Development of contractor construction managers
- The vision of the future contract manager
- Resourcing for the future

4.4.3 Communication

There were considerable concerns about communication between both contractor and Asda and also between contractors themselves. All contractors thought that the potential for sharing information and knowledge about Asda projects was not being utilised effectively. Contractors felt that it was difficult to share information with other contractors as they felt it was a risk and raised the chances of losing competitive advantage. It was felt that the sharing of their own procedures was undesirable because this is what the contractors compete on. Contractors are therefore at present still protecting their interests by with holding information.

It was pointed out that due to the shortness of the construction programme, the communication and reporting of problems as construction progresses would be difficult. As one contractor put it

Contractors can't remember yesterdays problems, as they are too busy solving new ones. Discussion of problems during the process might therefore actually impede the efficiency of the construction process.

One contractor felt that this withholding of information was unnecessary and that sharing of knowledge and resources would better equip the existing contractors to resist external competition. It was further suggested that brainstorming sessions at the end of jobs between the contractors would be a valuable learning tool.

Asda felt the ineffectiveness of information sharing was unfortunate as the pooling of resources would bring additional benefits to Asda regarding cost and quality.

Asda were employing consultants who were assessing the development system of Asda and are looking towards a standard procurement procedure. The contractors felt that they should have more involvement with this assessment. They pointed out that they are employed as supposed experts and the lack of involvement is considered as a lack of trust in their ability and a 'big brother' feeling not perhaps in harmony with the partnering strategy.

There was some confusion concerning the roles of certain personnel and the titles afforded them. To save confusion it was agreed that project managers from within the contractor's organisations should be referred to as site managers.

Regarding the question as to whether Asda are being treated as equals it was felt that there was an imbalance in Asda's favour that needed addressing. It was felt by the contractors that Asda should be responsible

for the gathering of information and the pulling of people together on issues, and they should disseminate the information.

4.4.4 JCT Contracts

Asda utilises a heavily modified version of the JCT80 contract.

There was considerable dissatisfaction with the number of amendments to the contract (47 in all).

The contractors felt that the large number of amendments tended to put the contractor on its guard, which is perhaps the wrong way to start partnering. Two contractors had queried the inclusion of 27 and 28 amendments respectively. Each received a revision of three of them.

The contractors predominantly disliked the JCT80 form of contract because of the requirements of notice. The contractors, in order to protect themselves, tend to give notice before a problem really manifests itself. One contractor suggested that the giving of such notice might be the time to initiate partnering talks. Asda asked which contract might be better. The contractors did not provide any suggestions at this point.

4.4.5 Collateral Warranties

Contractors questioned the reason for the inclusion of collateral warranties. They mentioned that in their experience they were lengthy and imposed extra conditions as well as additional problems with lawyers. Asda explained that these were required to give the property department security to sell on in the future. It was mentioned that with a third party owning the land for example then problems are likely.

4.4.6 Payment Schedules

There was a mixed feeling concerning the promptness of payment by Asda. One contractor said that one renewal project of only 12 weeks,

75% of the work would be completed before the first payment. The contractor would have to support the sub-contractor throughout this period and this will increase the financial risks. There was a suggestion that Asda might consider early payment.

Other contractors, (the majority) had no complaints about the promptness of payment.

4.4.7 Construction Manager Development

There was considerable emphasis on the importance of staff training for those within contractor's organisations to gain experience of Asda's culture and working practices. 'Seeing and doing' was considered the best way to train staff. Several contractors were introducing new people to the Asda specific teams on a frequent basis where the experienced would help the new. The differences in organisational culture between clients and contractors were seen to be of critical importance.

The understanding of store operations by the contracting team was seen to be of very important and Asda suggested that contractor's staff attend induction events, which was received positively by the contractors.

4.4.8 Performance Enhancements

Asda asked about the validity of performance bonuses. Asda suggested that it was very much a sales driven idea. Some contractors said it was already in place in their organisations but not at the individual level. It was decided that bonuses and rewards to individuals could cause problems of jealousy, isolation of the individual from the team or a feeling of lack of un-appreciation and lack of recognition by the other members of the team. The measuring of an individuals performance in

what is supposed to be a team effort was therefore seen to be somewhat difficult and the idea of a team bonus scheme was seen to be much more attractive.

4.4.9 The Vision of Future Contract Management

The question was posed, what can partners do to make the partnering policy work more effectively? The contractors responded that they wanted to be made more responsible for the construction work and have more involvement with suppliers. One contractor suggested that they were only getting paid for half of the work they were managing. The contractors said that they wanted to be holding the purse strings and would accept responsibility.

Asda referred to an example of a store development where the contractor took absolute responsibility for the job and where bankruptcy of sub-contractors caused huge problems for the job. Asda then commented that the idea was OK but the contractor had to know what they were managing. One contractor commented that his was no different to any other construction project. The issue of how to deal with sub-contractors arose. One contractor jokingly responded that they would be dealt with in much the same way as Asda deals with their main contractors.

Asda posed the question as to what benefits and disadvantages the current partnering arrangement afforded. One contractor mentioned that this is what had been discussed all along. Some of the points raised were as follows:

- The desire for single point responsibility was again mentioned
- The contractors felt they looked naive in certain circumstances where Asda personnel had the role of undertaking tasks that normally would

have been under the contractor's jurisdiction, for example the store manager.

- Another contractor pointed out that he felt Asda might give priority to certain jobs on site, for example the supply of component parts. Asda responded that this again was normal to many construction projects.
- Lack of information concerning the Long Term Partnering programme was reiterated.
- Complaints that under the form of contract, the process for re-specification, which could afford savings and provide additional profits for the contractor, was unlikely to be fruitful due to the very limited project time scale involved.
- One contractor pointed out that they did not want to take advantage of the sub-contractors.
- Another contractor mentioned that they had little control in bargaining and cost cutting due to the fact that they were told to go for the best price by both the project managers and the quantity surveyors.
- Asda responded to the above by mentioning that the contractor must have the confidence to go for the best deal and should see that the cheapest is not always the best.
- The contractors desire more freedom to drive down prices.
- Asda supported the possibility of benefits being afforded by the contractors tendering for larger packages.
- The contractors generally felt that there was insufficient structuring of responsibilities especially regarding project management responsibilities. Asda responded that there was an organisational chart available with role definitions and that this would be forwarded to contractors.
- Contractors argued that perhaps the Asda project managers were being briefed out of sync with the contractor's representatives.

- All contractors argued that they had the personnel to take the lead role in projects.

4.4.10 Design Issues

Contractors expressed dissatisfaction with the speed of design, stating that they do not get on with it early enough due to work not being signed off efficiently. Asda expressed that this was an area that would be improved .

One contractor suggested that more standard details might be utilised and another suggested that if a set of standard details were properly worked up, than architects would not have to draw them but could simply refer to them, thus saving time. Others responded that standard details are only workable for the easy details. Asda also pointed out that Marks and Spencer have a large book of standard details but no one knows how to use them!

The process for partnering with the design team was discussed. At present the design team receive flat fees and all get the same. Asda want to avoid 'no hay no pay' philosophy. Asda pointed out that there was a problem in partnering with designers due to Professional Indemnity insurance (PI) and consequential problems with name changes on drawings.

Asda wish to remain in control as they are fearful of quality. They also require flexibility to change the design if they wish. The contractors pointed out that this would be expensive with or without a partnering strategy in place.

Asda reposed the question of which is the best contract mutually. They stated that ideally a turnkey contract would be best, however were fearful of problems with this type of contract. The contractors seemed to agree that design and build would be the best contract. They could buy in designers or undertake the function in house.

4.4.11 Resourcing for the Future

Asda reaffirmed the importance of contractors being aware of project organisation and task allocation and promised to give contractors more information. Asda asked contractors when they would ideally like to get involved on the project. All contractors responded that at the very beginning would ideal and that preferably they would like to be involved at the same time as the design team. Furthermore the choice of site has important implications for cost and they would like to be informed of the choice of site at an earlier point.

4.4.12 Time Principles

Asda raised the issue of JIT supply to site in order to minimise wastage. The contractors said this was desirable but would be more likely with more information, than resource. One contractor stated that 'just in time information would be nice'.

Asda described its intention to withhold certain design packages for example the shop floor layout and possibly the office layout until later on in the construction programme. The sales floor layout is to be held until 75% into the programme. The contractors at first were highly dubious about this until Asda explained that these designs would be final with no possibility of changes. The contractors said it might be workable if Asda met the proposed dates for supplying the drawings. Any lateness would

have catastrophic effects on project completion on time. It was commented that this concept could be described as 'JIT Design'.

4.4.13 Summary

Generally the main issues raised were of as follows:

- Contractors urgently require more information about Asda development programme. (It was felt this seriously hinders the success of the partnering policy) especially regarding long-term training of contractor's staff.
- Contractors require more information about Asda staff responsibilities and the project organisation as a whole
- The type of contract used
- The number of amendments to the contract
- The responsibility of the contractor (i.e. they want more in order to push down prices)

Asda want information about contractor's experiences with other retailers on store development management, contracts, procurement and building technology etc. The contractors seemed less than willing to afford much information due perhaps to this being one of their main bargaining points in order to obtain more information at an earlier stage from Asda, concerning primarily the programme for Asda store development and the contractors future job security. One contractor admitted that they would share more information if they had greater certainty of future work. The Contractors were especially upset about having to move staff experienced on Asda projects over to other jobs due to the lack of job security as they are attempting to train staff for this type of project.

Asda admitted that a change in philosophy regarding Asda's impression of contractors and the construction industry generally was required regarding

trust and the sharing of programme information. The ASDA partnering representative also stated that structures, functions, procedures and communication processes must be commonly agreed and understood and that the degree to which each party maintains control and where risk and responsibility lie is important and should be identified

4.4.14 Conclusion: Key Factors Relating to Partnering

The ASDA partnering arrangement therefore embraced a number of key partnering procedures consisting of the following:

4.4 Key Procedures Implemented	
1	Relatively rigorous selection of preferred contractors
2	Client driven partnering
3	A long term approach to partnering on multiple projects
4	Long term partners became very familiar with clients procedures and working practices
5	Contractors were involved as early as possible
6	Team aimed to achieve JIT design
7	Team willing to discuss problems and attempt to rectify

Key Caution Points identified consist of the following:

<i>Caution Points</i>	
1	High levels of competition between partners = little trust
2	Partners lose trust if client keeps information from them
3	Contract changes put contractors on their guard (higher risk) ⁵⁴
4	Partnering seriously hindered if client does not pay promptly

⁵⁴ Section 4.4.4

- 5 Partnering contractors unhappy when there ability to cost cut and bargain is reduced. (They like freedom to drive down prices)⁵⁵
- 6 Partnering with designers seen to be problem due to PI
- 7 Contractors require job certainty to resource the job with the right people (Those trained up for the work see Procedures (5)
- 8 Training of the partnering teams requires time and effort
- 9 Careful choice of bonus/ reward schemes. Team bonuses as opposed to individual company bonuses recommended.

⁵⁵ Section 4.4.9

4.5 The Contractor Survey

Most of the research studies in construction partnering undertaken prior to the commencement of this Thesis, have provided their evidence based on case study and qualitative data. Much research has attempted to define the nature of the partnering relationships but there is little quantitative evidence published on whether partnering is having a beneficial effect on innovation, communications, time, quality and cost. The contractor survey attempts to provide quantitative data on the performance of partnering in the UK construction industry, in order to help identify areas in which it is lacking and might be improved.

4.5.1 The Study

This study involved a survey by questionnaire, of a range of companies involved in construction. The questionnaire items were generated to explore issues raised during the literature review and the mini case studies. The questionnaire addresses company background, project background, project performance, communications, innovation, construction management, inter-organisational relationship and roles and responsibilities. The items on the questionnaire were presented as statements using Likert type (1-5) scale for responses.

4.5.1.1 The Sample

The sample was chosen from a database of 500 companies, 350 questionnaires were distributed, a total of 110 responses were used for analysis.

4.5.2 Results

4.5.2.1 Company Background

The companies surveyed consisted of medium to large and large national contracting organisations. The respondents were middle to senior

management with financial, construction management or overall project management responsibilities. The results therefore illustrate views and experiences of contracting organisation personnel.

4.5.2.2 Project Background

Of the respondents, 38 projects were responded to as partnering, 54 as non-partnered. The majority of the partnering was between clients and contractors. The majority of partnered projects were using either Design and Build or Negotiated Tenders as the form of procurement, whereas the non-partnered projects were more likely to be JCT.

Procurement	D+B	NT	JCT	DBFO	FRM	CM	D&B/NT
Partnered	12	13	4	1	3	2	2
Non-Partnered	15	4	24	2	0	2	4

Table 9 : Type of procurement

4.5.2.3 Project Performance

Partnering did not make any difference in terms of the lines of responsibility for quality or the slippage of quality standards. However in partnering projects, standards were much more widely appreciated and the client was aware of what was realistically attainable in terms of quality on the project. The results indicate clearly that partnering projects were significantly better in terms of achieving cost (Figure 7) and time targets (Figure 8). In addition, the site work of all sub-contractors was perceived to be of higher quality on substantially more partnering projects than non-partnering projects.

There was less evidence of conflict (Figure 9) concerning product specification on the project in partnering situations. There were significantly less construction problems associated with inaccurate

specifications and drawings. However Partnering did not indicate any significant difference in the amount of snagging required.

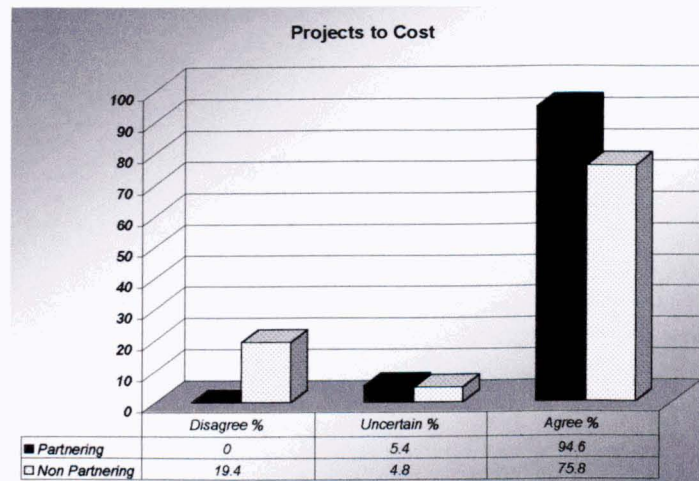


Figure 7: The project was on target in terms of cost

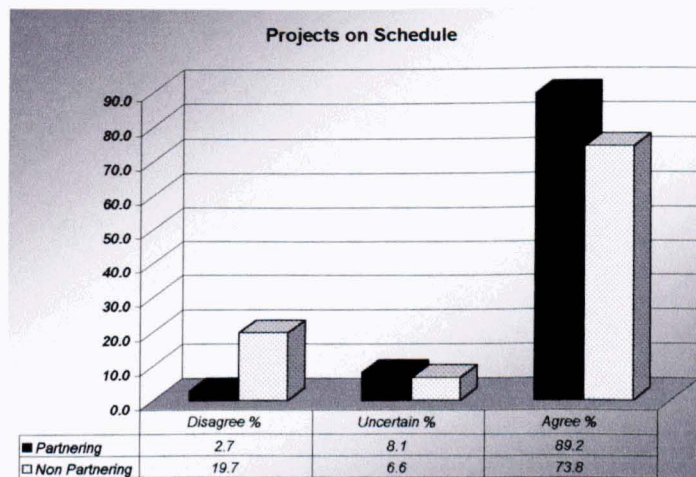


Figure 8: The project was completed on schedule

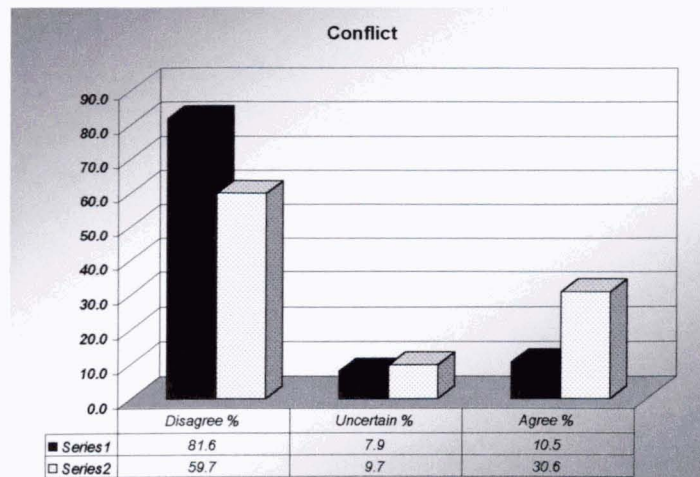


Figure 9: There was considerable conflict concerning the product specification on the project

4.5.2.4 Project Problems

Partnering projects reported significantly less problems (Table 10a/b) on the projects as a result of poor design information, poor cost information and poor information from services engineers. However the inability of suppliers to deliver components at the correct time was still a problem to a degree for both partnered and non-partnered projects. Also client-changing requirements caused problems for both groups. But problems due to disputes between project contributors were significantly less on partnering projects and project teams were perceived to be significantly integrated on partnered projects. (Table 11)

	Poor Design Information		Poor Cost Information		Poor Information from Services	
	Agree	Disagree	Agree	Disagree	Agree	Disagree
Partnered	47.2	38.0	16.7	66.7	26.5	58.6
Non-Partnered	62.9	29.0	24.2	48.4	44.3	32.8

Table 10a: Project problems

‘On the project problems have occurred as a result of the following’:

	Supplier Delivery Delay		Changing Client requirements		Disputes	
	Agree	Disagree	Agree	Disagree	Agree	Disagree
Partnered	22.2	61.1	58.3	36.1	21.1	68.4
Non-Partnered	17.7	51.6	51.6	30.6		

Table 10b: Project problems

‘On the project problems have occurred as a result of the following’:

Project Type	Agree	Disagree	Uncertain
Partnering	80.00	0.0	20.00
Non-Partnering	64.5	16.1	19.4

Table 11: Generally the project team was very well integrated

4.5.2.5 Innovation

On partnering projects significantly more companies reported using innovative management techniques (Figure 10) and production techniques (Figure 11). However the results indicated that the clients are not necessarily the drivers for innovation with only 36% of partnering companies reporting that the client actively encouraged them to utilise innovative production techniques. 85.7% of the partnering project respondents reported that innovation occurred as a result of people working together effectively. IT systems were utilised to link up with other project organisations slightly more on partnering projects however the results indicate rather disappointingly that neither groups were using IT links (Figure 12).

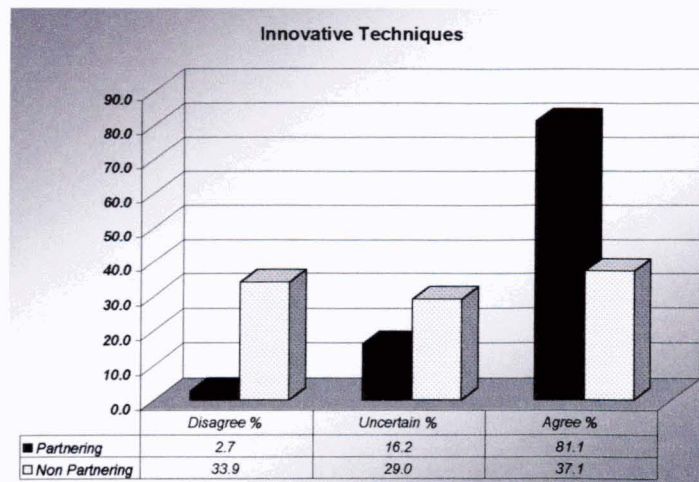


Figure 10: Innovative management techniques were used on the project

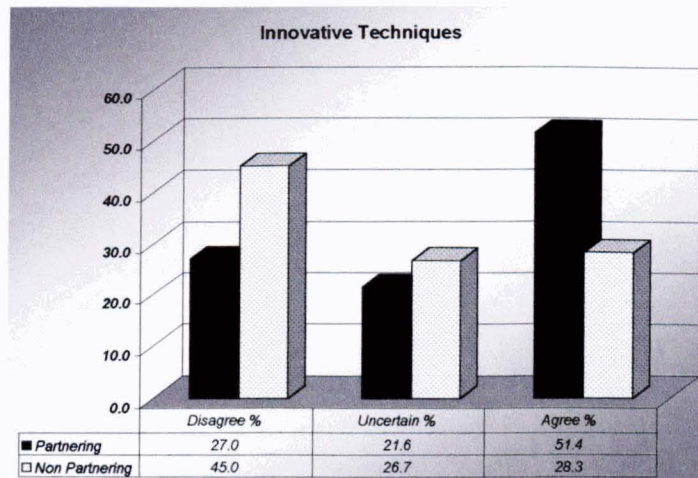


Figure 11: Innovative production techniques have been utilised on the project

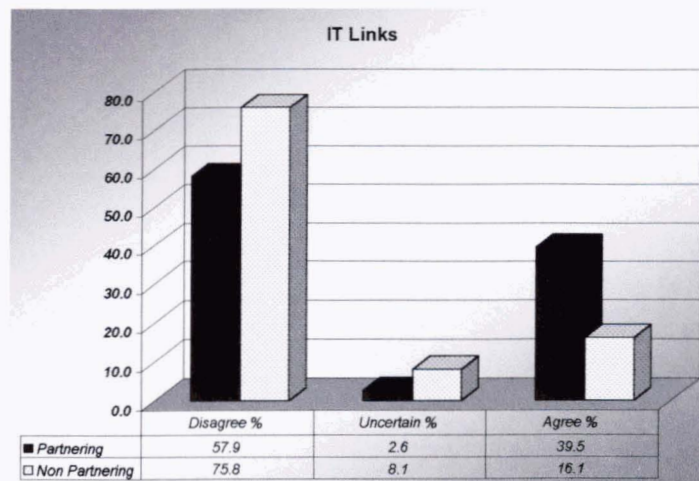


Figure 12: IT systems were used to link up with other project organisation

4.5.2.6 Construction Management

The results of questions on construction management reveal little difference between the groups in terms of management structure or labour procurement. (Table 12) However partnering projects did encourage company operatives to contribute to operations strategy marginally more than non-partnered. The most significant differences was the perception of the complexity of the contract (Figure 13), the non-partnered projects perceived much more contract complexity than the partnered projects. Also suppliers were perceived to be committed on more partnered projects (Figure 14).

Project Type	Agree	Disagree
Partnered	56.8	35.1
Non-Partnered	58.6	20.7

Table 12: Flat management structure was used

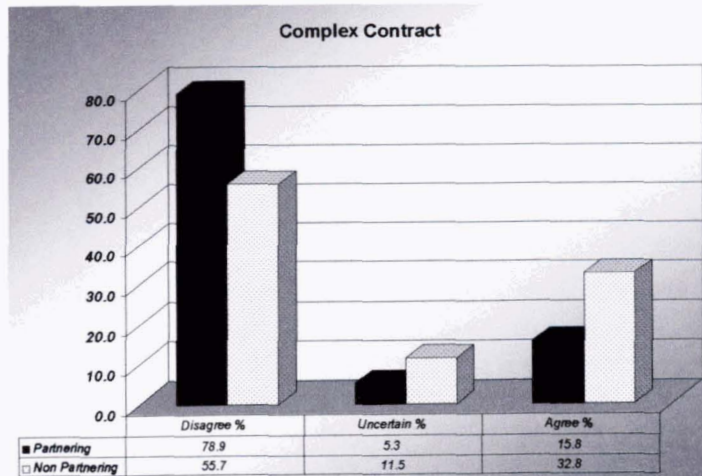


Figure 13: The form of contract on the project was too complex

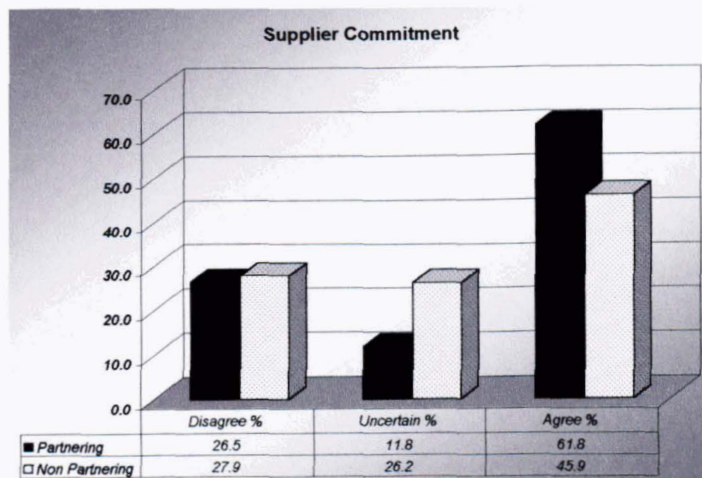


Figure 14: Our suppliers were committed to us

4.5.2.7 Inter-organisational Relationships

86% of partnering respondents reported a partnering policy was in place on the project. 61% reported that this policy was well understood. Both partnering and non-partnering respondents reported long-term relationships with the partners involved in the project. However, in all but one relationship the partnering respondents reported substantially greater long-term relationships, particularly in relation to suppliers and subcontractors. 70% of partnering respondents did not agree with the

statement 'the partnering arrangement did not produce any tangible benefit on the project'. 68% of partnering respondents believed the arrangement resulted in identified cost savings with 76.3% believing it reduced conflict.

The results indicate that partnering arrangements are not just conducted at a senior level. However there was little indication that team building (Figure 15) took place formally in partnering projects. Indeed informal team building was reported by both partnering and non-partnering respondents. In addition both groups of respondents reported they had good relationships with all the companies involved on the project, and knew whom to talk to get things done.

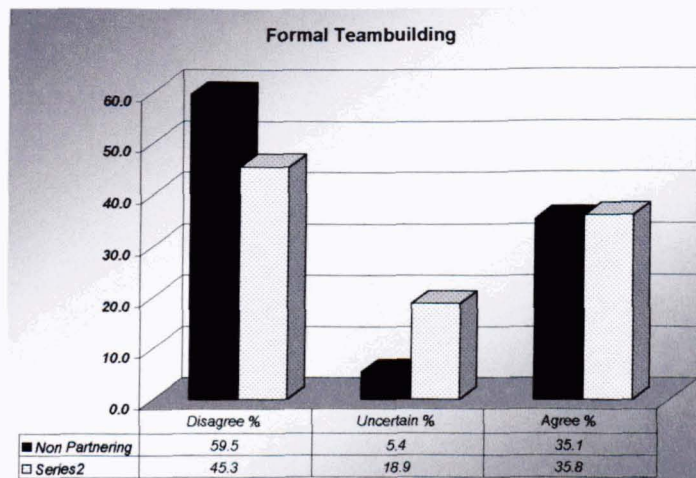


Figure 15: Teambuilding took place formally

4.5.2.8 Roles and Responsibilities

This section of the questionnaire was aimed at identifying approaches to risk and responsibilities. Interestingly, on scales, which measured their approach to risk, it was the non-partnering respondents who indicated they would take greater responsibility for greater profit margins and more risk, if more control was given. However it was the partnering companies

who reported enough executive control on the project, and greater awareness of responsibilities at the outset of the project. In terms of project task identification and allocated project responsibilities, there was little difference between groups.

Figure 16 illustrates how the respondents rated the different contributors to the project in terms of their awareness or lack of awareness of their responsibilities on projects. This reveals that both partnering and non-partnered project participants were perceived to be aware of their responsibilities by the company respondents. Yet again it indicates that partnering enables a greater awareness of responsibility particularly for the clients and project managers.

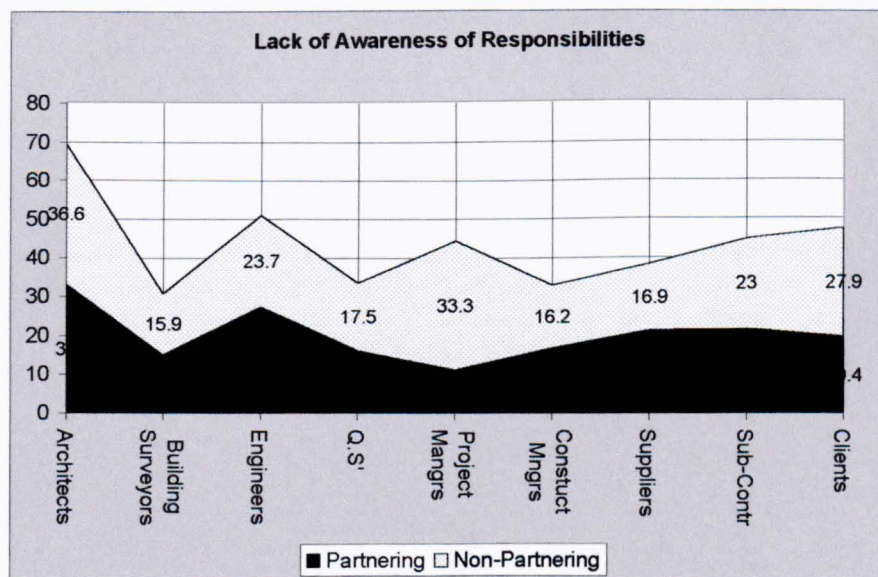


Figure 16: The following organisations demonstrated a lack of awareness of their responsibilities on the projects

In general the impact on projects due to responsibilities and task problems has not been significantly affected by partnering, as there is little specific difference between groups responding to such factors (Table 13)

Impact on Project	Partnering		Non-Partnering	
	Agree	Disagree	Agree	Disagree
I am hindered by other contributors not fulfilling their role	34.3	60.0	43.9	42.1
Contributors duplicated tasks that had been undertaken by another party	16.2	64.9	16.7	65.00
They undertook unnecessary tasks	17.1	65.7	28.3	46.7
They failed to undertake necessary tasks	41.7	50.00	55.7	31.1

Table 13: Responsibilities & tasks

4.5.3 Discussion

The questionnaire results indicate that partnering is having a positive effect on project costs and time targets. In addition, site work was considered to be substantially higher quality on partnered projects. Conflict was also reported as less evident on partnering projects, and less problems were reported due to poor information. Project teams were also perceived to be better integrated.

Generally therefore partnering was achieving the desired benefits, however there are still a number of factors, which need to be addressed. For instance, although quality standards were not reported as higher in partnering situations, clients were perceived to understand what was realistically attainable in terms of quality standards.

Also the use of IT was still disappointingly low. The successful aspects of partnering were about people communicating and working together effectively which is something ICT can help improve dramatically. One could surmise that IT could help facilitate partnering by providing the tools with which participants can communicate and integrate more effectively.

Partnering was not however implemented through formal team building but still by informal team building. The fact that the partnering respondents reported a level of understanding and awareness of responsibilities at the outset of the project suggests that the benefits accrue from the partnering arrangement forcing responsibilities and task allocation earlier in the construction process and therefore addressing potential problems and processes, that often arise earlier in the project lifecycle. This also suggests that partnering influences the whole Design and Construction process and by more effective process management, using partnered teams from the onset, time delay and cost increases could be further eliminated as a result of misinformation and miscommunication.

The evidence presented here may also indicate that partnering is used as a means of improving the existing formalised processes, of contributing indirect process spin-off i.e. creating better understanding and feelings in general, resulting in less destructive growth and resolution of problems.

The results of this study do indicate that partnering on those projects surveyed was producing tangible benefits, but there are still issues of team building, supply chain management, front end planning, process management and IT usage which need further consideration and refinement.

4.5.4 Summary Points

The tables below summarise the main findings obtained from the contractor's survey. They summarise the key benefits of partnering which were identified as well as listing a set of caution points, which list the aspects of partnering found to be problematical or in need of further development.

Effective	
	In partnering projects the following benefits were identified over non-partnering projects:
1	Quality standards more widely appreciated
2	Less evidence of conflict
3	Less Disputes
4	Better team integration
5	Greater implementation of 'innovative' management techniques
6	Greater clarity and understanding of the contract
7	Greater success in achieving cost targets
8	Greater success in achieving time targets
9	Greater awareness of responsibilities

Caution points include:

<i>Caution Points (ineffective aspects)</i>	
1	Problems associated with changing client requirements were as evident on as on non-partnering projects
2	Inability of suppliers to deliver on time was a greater problem on partnering projects than on non-partnering
3	The use of integrated IT, although higher than on non-partnering projects, was still relatively low ⁵⁶

⁵⁶ Although since this survey there has been a significant growth in IT use generally and the situation regarding partnering projects may have altered.

- | |
|--|
| <ul style="list-style-type: none">4 Project task identification and allocation of responsibilities were equally problematic on both partnering and non-partnering projects5 Team building often informal on partnering projects6 Partnering policies (when in place) were often not clearly understood |
|--|

Chapter 5: Construction Case Studies

5 Introduction

The following Chapter presents the findings from the three case studies undertaken with Bovis Construction Plc (Now Bovis Lendlease). Bovis were chosen because they have reportedly undertaken projects utilising the principles of partnering for many years. The case studies seek to identify the key principles for effective partnering implementation according to Bovis and their partners. As a building block, the initial principles for effective implementation identified from the literature review, mini cases and Contractors Questionnaire were used as a research framework, from which interviews were structured and the projects monitored. The case study research investigates the degree to which these principles were embraced and also obtained from key participants a set of recommendations for better partnering, which are listed in the summary section of each case study.

The major lessons from the Bovis case studies are compared and discussed at the end of this Chapter. The Chapter Map for this section is shown below.

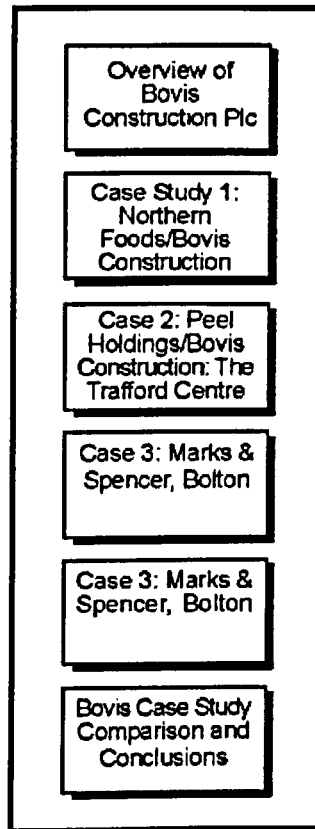


Figure 16b: Chapter map for construction case studies

5.1 Overview of Bovis Construction Plc

Bovis is one of the world's biggest construction groups undertaking both large, prestigious projects and smaller, but equally valued works. Bovis remains close to, and focused on, the needs of individual customers and sees closer working relationships with Clients as the key to improved performance in construction. Team working is encouraged in order to develop understanding of the clients' business. This relationship becomes two way, and Bovis expects their construction managers to be known personally by the client's top management, who may even ask for particular individuals to manage certain projects. Bovis has always been unique in its approach to construction. This is demonstrated by the Bovis Fee System, which was developed in 1927, and was a radical departure from the lump sum tendering which is still the standard industry

procurement route. The relationship that subsequently evolved with Marks and Spencer in the 1930's must be considered one of the first notable long term collaborative arrangements in construction. Bovis has many other long-standing relationships with Clients including Safeway, Slough Estates and Hewlett Packard and Bovis pride themselves in being client focused. Listening to these needs led to the introduction of Bovis Effectiveness in 1991 which was launched with three key targets:

- Reducing construction costs by 30%
- Increasing staff productivity by 100%
- Improving customer satisfaction

These three aims have been in tune with more recent efforts to lead major change in the UK construction industry, by working in partnership with both customers and suppliers. It was recognised that the cost and productivity targets set by the Bovis Effectiveness Initiative would require a radical new way of doing business: new relationships, new cultures, new contracts and new attitudes.

5.1.1 Bovis View of Partnering

Bovis believe partnering to be a 'long-term commitment between organisations for the purpose of achieving specific business objectives by maximising the effectiveness of each participants resources'. Facets of this include:

- Everyone seeks win-win solutions
- Value is placed on long-term relationships
- Trust and openness are norms
- An environment for long-term profitability exists
- Continuous improvement and lower costs

- An understanding that no-one benefits from the exploitation of others
- Innovation is encouraged
- Each partner is interested in supporting the other to meet jointly agreed objectives
- Overall performance is improved

Bovis also believe in partnership with suppliers as well as clients. Specific training programmes for staff involved in partnership relationships have been undertaken to change people's attitudes which is necessary to change people's actions. These training programmes are open to both customer and supplier companies. The driving idea is that partnered contractors should be fully aware of the clients long and short-term business needs. Co-operation between partnered contractors must become the norm and be aimed at improved overall performance. Ultimately Bovis would like to see a complimentary culture develop which is common to all parties involved in the construction process. Bovis feel that 'partnership' is consistent with their existing culture, key elements of which are 'client focus' and 'quality planning'. Bovis believe that partnering can produce better results than traditional approaches to the management of the construction process.

'Client Focus' - Bovis operate a policy that the Clients hold the key to successful projects, a 'client-centred philosophy'. Latham (1994) understood that clients are at the 'core of the process' and in Constructing the Team refers to them as the 'driving force'. Bovis stipulate throughout the studies, that it is only by clients and the industry working together will performance and productivity improvements be achieved. The Bovis view is that partnering is a Client driven process giving working benefits to both the contractor and the Client. It requires the 'customer power' of the client to lead the way to real partnership, and for contractors with the

appropriate culture and people to match their progressive approach to construction procurement.

‘Project Quality Planning’ - Bovis were the second UK contractor to achieve BS 5750 accreditation and in July 1994 the additional development and implementation of Management of Design procedures resulted in registration to BS EN ISO 9001. To move beyond quality control, Bovis developed a unique model for the total quality management of the construction process. Drawing on the experience of one of their American companies, McDevitt Street Bovis, a new approach to team building, quality management and continuous improvement for construction projects was introduced. Such a format was in operation during 1993 and 1994 throughout the UK with clients such as ASDA, BAA, Railtrack, Safeway and Northern Foods.

This novel approach entails an initial team-building day⁵⁷ attended by the client, designer, construction manager and contractors with the purpose of getting to know each other and identifying key issues for the particular project. Deliverables include a job-specific Mission Statement reached by consensus, identifying the roles, responsibilities and success factors for each of the participants, and, a quality related action plan. This plan focuses upon customer identified critical success factors and may identify quality improvement teams to address issues such as design co-ordination, commissioning, communications and snag-free handovers. Client satisfaction can be measured throughout the duration of the project, highlighting improvement opportunities and the potential for continuous improvement of team performance.

⁵⁷ Which is similar to the supplier days undertaken by Ferodo.

A post-completion review is held to enable lessons learned to be incorporated in future projects and be communicated to other project teams.

Barriers exist as a result of the traditional ways in which the construction industry operates and these must be overcome. A key element in achieving the required change is for the 'customer power' of the client to lead the way to real partnership. Such a progressive approach to construction procurement will only be matched by those contractors with the appropriate culture and individuals within the organisation. Disputes and claims are continually a source of frustration and disappointment within the construction industry, and Bovis propose that partnering between like-minded organisations and enlightened and empowered people is the way to guarantee a successful future. The Bovis culture and tradition of non-adversarial relationships with customers makes them uniquely placed to research and benchmark partnering in the construction industry.

5.2 Case Study 1: Northern Foods/Bovis Construction

This case is based upon a study of a construction project selected from a series of projects, which together form a long-term relationship between Northern Foods and Bovis Construction. The data was collected through interviews within Bovis and Northern Foods. Bovis personnel consisted of managers through to site personnel. Northern foods staff that contributed to the research consisted of senior management as well as managers responsible for the operation of the distribution centre.

Three distinct levels identified in Chapter 4 were investigated within the partnering relationship consisting of:

- Strategic
- Managerial
- Operational

5.2.1 Strategic

This is probably the key to a continued partnering arrangement and is critical for long-term stability. It is at this level that relationships are historical and well established with memories of successful projects and developed understanding and a sharing of values, norms and standards. This provides an opportunity to share commercial aspirations, to allow the respective companies to plan future major developments. Key individuals at this level are directors (Bate and Bryant) and senior managers (Brealey and Worthing). At this senior level there is a long-term view of the relationship.

5.2.2 Managerial

This level of the relationship concerns the management and organisation of the project. Senior managers and project managers and co-ordinators

are involved in the interactions and tend to have a medium-term view, which is project specific, although key people usually have some previous experience of working within the relationship.

5.2.3 Operational

This level of the relationship occurs in the interaction between the managers and the people doing the work on a day-to-day basis. It is important to embrace the sub-contractors as an essential part of any project team. Operational relationships tend to operate a project (short-term) view, but history shows that this can develop into a longer term working relationship between those parties involved when performance is good.

In order to investigate the partnering implemented at each of these levels project and design team meetings were attended, interviews conducted and relevant project documentation analysed.

The first section will set the scene for the case. The participants in the case study are Northern Foods and Bovis Construction, a brief history of the long-term relationship and the background to the particular project is described to give the reader some contextual understanding. The 'story' of the London Colney Distribution Centre 1993-1996 is then presented, concentrating upon key activities at pre-construction, construction and post-construction phases. The case then identifies lessons for future practice identified from this case and from more general experience of participants. The final section provides a summary and draws some preliminary conclusions, which will subsequently be verified with data from the other case studies.

5.2.4 Effectiveness Initiative

During the early 1990s Bovis operated the Bovis Effectiveness Initiative to improve productivity and cost reductions by 30%, and to meet the needs of their customers in the 1990's. Having made considerable progress towards achieving targets and in changing the culture of the organisation, the initiative was relaunched in 1995 as Bovis Continuous Improvement. This reflected the increased awareness of the part that Total Quality Management principles and practices were having on day-to-day business activities. Following discussions between Northern Foods and Bovis after the launch of the Bovis Effectiveness Initiative in 1991, and a joint study tour to the USA in 1992, a strategy was agreed to identify areas of further improvement and implement new ideas to achieve better value for Northern Foods on future capital spend projects. Also, Bovis and Northern Foods independently, had invested a lot of time and money in sending employees on team building courses in order to recognise the functioning of teams and how to break down barriers and establish positive team working during the course of an activity.

The London Colney Project sought to build upon and improve previous performance from other projects, continuous improvement with respect to the effectiveness and efficiency of project processes and outcomes. Bovis / Northern Foods had a track record of being innovative and debriefing performance on previous projects to look for improvements on following projects. This led to the implementation of the Effectiveness Initiative based upon three key areas:

- procurement methods
- cost control
- development of teamwork

The Effectiveness Initiative incorporated rigorous value engineering leading to fitness-for-purpose design, continuous improvement, a right-first time philosophy and a personnel suggestions box. This followed the well-established philosophy between the companies to drive out unnecessary costs in the construction process. The aim of this initiative being to improve quality and reduce costs (US levels) for a 'repeat' client.

With team working being central to the 'right first-time' philosophy of the Effectiveness Initiative positive efforts were made to foster this. The original philosophy of what Bovis were endeavouring to achieve on the project were discussed with the Client and Consultants, the Design Team and Architect at their offices in Guildford. This initial meeting set out the basic concept on how costs could be driven down by being flexible with design issues, looking to use performance specifications, encouraging contractors to develop pro-active ideas of alternative design and specification issues to achieve objectives and performance at lower cost. This was followed by a formal team-building exercise, which is detailed in the next section. At this point however it is worth identifying that the outcome of this day, reached by a consensus of the delegates, was to focus on five specific areas of the project to improve and target performance:

- Appreciation and recognition of other parties
- Development of a mission statement
- Late instructions
- Defects
- Finance

Each of the above was allocated a 'prime mover' and actions / suggestions were up-dated to the whole team on a two weekly cycle at the regular Progress Meeting. This was a continuous process throughout the project. The following section describes the key activities in the construction process and the mechanics of managing the relationship between Bovis and Northern Foods, using the project team at London Colney, a regional distribution centre for Northern Foods.

5.2.5 Project Story

Whilst it is useful to examine an individual project within a long-term relationship it must be remembered that activities or constraints upon any particular project will be directly influenced by events, which have occurred on previous projects. This has both an upside and a downside but the extended relationship provides opportunities for continuous improvement and the identification of best-practice activities. This subsection describes some of the activities, which occurred during the London Colney Project.

5.2.6 Pre-Construction Activities

Key pre-construction activities can be summarised as follows:

- Feasibility and Site Investigations
- Scheme Designs
- Cost Planning
- Tendering and Contractor Selection
- Team Building Exercise

5.2.6.1 Feasibility and Site Investigations

Some 12 months before construction works ultimately started on site, the structural engineers (Rigby & Partners) conducted a Feasibility Study for

Northern Foods. This comprised investigations of the site, existing buildings, ground conditions and some land surveying work, and produced a report with certain recommendations. It was stated that the architects had been involved with the potential redevelopment of this site for years. The basic problem facing Northern Foods at this point in time (1992) was, 'is it worth purchasing the site for £20 million and then developing it?'. The existing building was currently being rented from the original owners, however Northern Food's needed to expand the capacity of the facility but the then owners could not fund the extension. The tasks performed by the structural engineer at this stage, though not directly related to the site purchase, included an investigation to make scientific comparisons with statements being made by the previous developer and their design team. Areas of concern were:-

- existing structure
- ground conditions

Rigby's work consisted of an investigation and fact-finding work with the outcome being the identification that the building was relatively simple but the ground was not. With this information Northern Food's had to decide whether they were prepared to proceed or not, which they eventually decided they would. They then needed to source capital to buy the building and the estate and once this was established and finalised the consultants and architects within the team alike felt, 'yes, we've got a job, - let's do it!'.

5.2.6.2 Scheme Designs

Northern Food's purchased the site from a developer and became responsible for site buildings, site roads and a pond. This estate management role was not an ideal situation as Northern Food's would not want this responsibility in the future, but would prefer someone else to

own it and to rent it from them. The ideal scenario would be to sell the facility on to a pension-fund in the future and because of this, 'Institutional Design Standards' were required providing a commercially acceptable standard with reasonable offices, adequate car parking and landscaping. The purpose of this is to make the facility more marketable.

Once it was decided that the project would go ahead the architect and Rigby's put various 'scheme' designs together. The architect (SBT), was employed directly by the client, having been commissioned to get planning permission for previous owners, which they had successfully achieved. The exterior had been designed though not specifically tailored for Northern Food's and minor amendments were made (such as the installation of sprinkler tanks, and extended service yard which required extra planning permission). On the basis of these, Bovis produced an initial cost plan in March 1993. This 'Elemental Preliminary Estimate Analysis' was issued to Northern Food's following an initial briefing meeting with Client and Architect (15/3/96). This initial cost-plan was put together on the basis of the 'schemes', which presented no more than ideas as to requirements and how the clients brief could be met. It was felt that this was facilitated through the established relationship and the understanding between parties, which existed. Having established this cost-plan the design programme was geared to complete procurement by October 1993 for November 1993 review. The team strategy was therefore to complete the design prior to the commencement of the work to the Distribution Centre based upon an agreed performance specification and suggestions from all members of the design team that in this case it could be said included the contractor. This was conducted in parallel with some early enabling and external works (July-December 1993).

The client's project manager started on the job just prior to the start of construction, with the design team and Bovis appointed and in place. The majority of conceptual design had been completed, though as building work progressed changes occurred through necessity. A space planning exercise had been largely completed but design was being developed and procured right through to November, with the concept of performance specifications and pro-active alternatives being sought from contractors to contribute to the cost effective saving reviews.

5.2.6.3 Cost Planning

At the beginning of this project, based upon the established long-term relationship, Bovis introduced the concept of an 'in house' cost consultancy service. The initial aim being to reduce the duplication in both cost and service provision through the traditional employment of a PQS, with Bovis Cost Consultancy (BCC) being responsible for the overall cost planning role and the procurement stage with the Bovis project Surveyor managing change, final accounts and payments. This initiative, which was accepted by Northern Foods, resulted in the first example of Bovis Cost Consultancy working with Bovis Construction. To do this required a level of trust on the part of the client who felt that the potential advantages outweighed potential disadvantages. The possibility of 'innovating' in this way was due in part to the involvement of 'key personalities' Haydn Worthing/ David Brealey/ David Short who had worked together successfully on previous projects.

Advantages in this arrangement included a cost saving of around £50,000 in professional fees, and potentially at least one less adversarial relationship (Bovis Construction / Bovis Cost Consultancy). This was balanced against the possibility that the actions of Bovis Cost Consultancy would not be wholly independent. (Bovis Cost Consultancy

was established in 1992 as the PQS arm of Bovis Construction to exploit a possible gap in the market and to provide a more effective service).

DATE	ACTIVITY & PROGRESS	COST
March 93	Elemental Preliminary Estimate Analysis issued to NF following initial briefing meeting with Client and Architect on 15/3/93	
June 93	Scheme and Cost Plan agreed	£6.2 M (Identified potential risk of £200K overspend)
Nov 93	Scheme Designs and Up-dated Cost Plan incorporating many effectiveness issues and potential £200K saving	£5.8 M
Dec 93	Additional Client works funded by effectiveness savings and up-dated Cost Plan, + £200K authorised expenditure	£6.0 M
Mar 94	additional Client Works and up dated cost plan, + £35K authorised expenditure	£6.035 M
Oct 94	Agreed Final Account incorporating further additional Client Works, + £20K authorised expenditure	£6.035 M

Table 14: A summary of cost-planning activities and progress

The project had been at the design stage for at least 2 years (1991) with no Bovis involvement. By early 1993 BCC became involved to assist Northern Foods with the initial feasibility options. BCC were employed to prepare the initial cost-plan and an outline budget was agreed between NFT / BCC in May 1993. The contract cost-plan was agreed on 23 June 1993 and this initial cost-plan was greater than the agreed budget but had identified potential 'risk' of £200K overspend due to ground conditions (£100K) and possible piling (£100K). This initial cost-plan with identified risk was agreed between BCC and NFT.

At this stage it was accepted that the 'risk' or potential overspend lay with the client. It was felt that a 'hard' commercial incentive at the beginning in the form of risk allocation would have had the effect of polarising parties and creating an 'adversarial' attitude which is not

consistent within a partnering relationship. Once the contract cost-plan had been established, responsibility was, in effect, transferred from Bovis Cost Consultancy to Bovis Construction for production of the building within cost.

5.2.6.4 Tendering and Contractor Selection

Key people from Bovis were interviewed and selection was based upon this and previous performance. At London Colney there was no formal selection procedure for the main contractor. On other jobs it would be usual for a series of interviews to take place with the most appropriate contractor selected based upon:

- Cost
- Trust
- Understanding
- Personality
- Ability to get things done

A basic question in forming the construction team is could these people work together, to sort problems out? It was stated that:

'Building is a people business - the right chemistry is important'. (Project

Architect)

The sub-contractor tendering process began from 23 June 1993, although the early enablement packages had been designed, tendered, analysed and appointed to permit mobilisation by the 5th July. The fast-track nature of the project meant that work-packages were tendered on a rolling programme as construction works progressed. The project aim was to

have 75% (of project value) procured by October 1993. This objective was achieved. The tendering process operated in a tough competitive environment, which characterised construction activities during this time due to falling workloads. Each package was tendered to approximately 6 contractors. Sub-contractors selected to tender were organisations / people who had worked successfully with Bovis in the past, with proven capability and established credentials. This process ensured a level of technical capability and hence in the tender analysis a great emphasis was placed upon the cost aspects of the analysis, with the main thrust to seek pro-active ideas from the sub-contractors to offer 'cost saving ideas'. Tender lists for each work package were developed by discussion with the whole project team, and, if necessary, an interview of potential contractors. All team members were encouraged to input suggestions and finally agree the list. Also, the Mechanical and Electrical contractors had both worked with the teams previously and understood the philosophy necessary for pro-active involvement and the development of alternative cost-effective solutions.

The tendering process operated within a framework of open-tender bids and the client could have been present at the opening of the tender submissions if he had wished to be. The purpose of this was to establish trust and openness as a central idea within the contract at an early stage. In fact the whole management and cost system was 'open' to all the members of the Project Team and all were actively encouraged to be pro-active and look for ideas and cost savings. This was the 'norm' for Northern Foods / Bovis projects. Bovis and the Design Team all worked for Northern Foods on an agreed fee scale and worked to serve the Client's best interest in a professional manner.

5.2.6.5 Team-Building Exercise

Once the sub-contractors had been selected measures were taken to establish and develop lines of communication. A general 'team-working' meeting was carried out with all sub-contractors. Also, a formal 'partnering' or 'team-building' day was held off site in a meeting room of a local hotel at the beginning of the project on 21st October 1993. This team-building day was staged when most of the key contractors were available, with the aim being to break down barriers, establish lines of communication and generally engineer a cohesive and healthy project team relationship. This was staged when key contractors had been selected following the procurement process. Sub-contractors, professional design team and contractors representatives were all present with 24 delegates in total and the post-workshop analysis showed a very positive response to this event.

The day was facilitated by Colin Andrews (Bovis) and was observed by an external management Consultant. One activity during the day was for people to team up, to exchange personal 'secrets' or achievements with the intention being to break down barriers, create a feeling of mutual trust and to make the team feel closer together. A business game 'Lost on the moon' was also utilised to show clearly how team working can be more effective than individual working. Feedback identified that the day was a success and most people would take part if such things happened again but a suggestion was future events could be carried out on a smaller, more focused scale.

Just before construction started, Colin Andrews also gave a talk to Project Team Members to up-date everybody with the progress that was being made by Bovis on other projects and what was being done to challenge existing practice in search of more effective methods; 'Bovis Effectiveness'. This was based around the aforementioned three key

aspects and added more substance to earlier discussions between the team:-

- o Cost savings
- o Procurement
- o Team-working

Bovis were attempting to further develop the 'partnering principles', which had worked successfully on previous projects. The concept presented by Colin Andrews was based upon a series of small but Continuous Improvements by both professionals and sub-contractors leading to 'right first time' with the goal being 'zero-defects'. This concept was based upon competency and self-certification of work. Also, the 'zero-defects' target was established by the team during the 'Team Building Exercise' by consensus and was championed by Peter Goldsmith and Mike Ward.

5.2.6.6 Pre-Construction Summary

This project was the first time that the architect, SBT, had worked within the Bovis / Northern Food's relationship. Within a 'traditional' model of construction their up front work was very good with excellent drawings and specifications, but on this project the concept was to use performance specifications / similar alternatives to encourage and stimulate proactive responses from the contractors. By adopting these methods, savings in excess of £400K were achieved which enabled Northern Foods to further improve the layout of the RDC and contribute to making Northern Foods more efficient in their business operations. So, in part due to the Effectiveness Initiative all the up-front design work was 'pulled apart' as value engineering occurred creating many frustrations within the design team. This also generated the feeling that the initial 'brief' had not been right. This resulted in obvious problems in team 'co-hesiveness' and what

was referred to as the 'sacred cow' scenario to protect the initial design ideas instead of incorporating change.

'...from the outset of the construction process there was conflict between

(a) the developed brief, (b) institutional design standards, (c) fitness-for-purpose (whose or what purpose?), (d) the Bovis effectiveness initiative which challenged existing design methods, materials and working practices.

These created a source of disagreement and increased complexity which ran throughout the project and resulted in extra tension within the relationship...'

(Statement by Client's Project Manager).

Also due to the involvement of Bovis Cost Consultancy there was a feeling on the part of the clients project manager that there was no independent QS, which he felt, created a strange relationship. Obviously great trust was required in this arrangement and as one Bovis manager stated 'this whole exercise in partnering and to a lesser extent the Bovis Effectiveness Initiative is aimed at changing the culture of mistrust and to help restore some integrity to the business relationship between purchaser and supplier'.

5.2.7 Construction Activities

This section of the report will highlight activities, which occurred during the construction of the facility, focusing upon issues, which were affected by or affected the nature of the relationships between parties. The areas that will be covered are:

- meetings

- who was the client?
- construction progress
- cost control
- identified problems
- factors which caused 'tension' on site
- safety
- team-working
- value engineering

The first six issues are directly related to the production of the facility, whereas the last three provide comments upon factors, which were mentioned during the interviews as important to the successful completion of the facility.

5.2.7.1 Meetings

Once the sub-contractors had been selected the first step before starting their works on site was to attend an 'Initial Pre-Construction Meeting' meeting co-ordinated by the Project Manager, Peter Goldsmith (key person) and the Construction Manager, Terry Phillips (another key person) to establish expectations, lines of communication and to identify problems / bottlenecks prior to the contractor commencing on site and to give support and direction to enable the most effective working. This helps to establish positive links before inevitable construction 'problems' started on site, and to establish the standards of behaviour expected of people working on a Bovis site. The more effective contractors are the keener their bids become on future projects, all part of a continuous improvement cycle. The meetings are 'open' and all members of the project team are encouraged to be present. Key aspects of this meeting include:

- Personnel
- Scope of Work
- Reporting Procedures
- Programme
- Workmanship and Quality
- Safety
- Protection and Site Cleanliness

When the job was underway generally 'Trade Contractor Progress Meetings' were held on a two weekly cycle with either individual or related groups of contractors. These are chaired by the Bovis Project Manager and these meetings regularly looked for further cost savings, alternative ways of doing things, either during the pre-construction or construction stages. The sub-contractors are represented by either Director or Senior Manager, dependent upon the size of their business and significance of the sub-contract to the project. Again these meetings are 'open' and members of the Project team are encouraged to attend.

'Weekly Safety and Co-ordination Meetings' were held with the site supervisors of the relevant sub-contractors and chaired by the Bovis Construction Manager. These meetings concentrate on short term objectives and on site co-ordination, achieving the objectives set in the Progress Meetings and working around the constraints often introduced and changed, to ensure the Client's business 'NFT' operates as smoothly as possible during major capital expenditure works. Again these meetings are 'open' and members of the Project team attend when there are specific issues, constraints or problems to discuss.

These activities were considered to be General Good Practice to be observed on all sites - not just within 'partnering' arrangements.

5.2.7.2 Who was the Client?

A problem which was raised was the fact that the project team did not know what was being built, the concept was understood but the detail had not been developed completely before works commenced.

'It would have been a great help to know what was being built at the beginning of the project...'

The advantages of this type of rolling design progress are that design and related decisions can be left as late as is practically possible. This arises due to the clients need for flexibility due to their industry and the dependence upon market forces (client - Sainsbury's, NFT building occupier, Northern Foods building landlord). What was to be held in the warehouse determined the interior layout of the facility (paper or tins?, ambient or cold-chill?, mobile or static?). This interior layout would obviously effect various construction details (i.e. aisle width, narrow or wide, has a direct influence upon where light fittings, the sprinkler system and CCTV are installed, and also positioning of fire exits). Milestones were established to advise the 'Clients' of the latest dates decisions could be taken without incurring costs and delays to the project. This is in fact what happened and the programme was developed including the basic strategy to erect the new warehouse as late as possible within the overall development and yet meet the key business objectives of NFT / Sainsbury.

On paper this was technically the 'easiest' project completed by Northern Foods /Bovis who had a track record of complex new build and expansion projects on both Greenfield and occupied sites. However the reality was that for a variety of reasons problems were encountered which proved to be far greater than were anticipated. The site had a well-

documented record of problems encountered on the original development, which had resulted in extensive renovation works. In light of this, risk budgets were identified and included in the initial stages of the project. An example was the piling for the building frame and this was funded from some of the earlier effectiveness savings and did not incur additional costs or extended programme. This is an area where partnering based upon openness with the client, places the contractor in a better position than they have traditionally been.

5.2.7.3 Construction Progress

Things moved fairly swiftly after Bovis received a Letter of Intent from Northern Foods on 25th June 1993 to take site possession on 5th July 1993 and commence enabling works, which comprised:

- Fencing modifications and diversion of footpaths
- Forming new access to the project from the existing London Colney By-pass
- Site strip and bulk excavation
- Demolition and extension to yard

Work commenced very much with a 'rolling programme' where detailed design was performed on a 'just-in-time' basis. Designs by the Architect and Engineer were progressed at their respective offices and site variances were addressed and co-ordinated by the relevant site based design staff. Bovis managed the design process and costs within the agreed Cost Plan. During construction, Rigby & Partners responsibilities were to design the structural elements of the project and to take a proactive position in adopting potential 'cost saving ideas' and to ensure the quality of the work on site was in accordance with the specification. Payments were handled by Bovis on a staged completion basis.

The commitment to 'just-in-time' working was an important element of the 'partnership' and team working, and is beneficial when programmes are tight or fast track. This approach can be contrasted favourably to other more 'traditional' approaches where the design is completed before contracts are let.

5.2.7.4 Cost Control

In relation to the financial side of the project, construction activities need to be well managed and co-ordinated as any problems on-site could have potential cost-implications. The production side and commercial side of all parties need to be openly communicating with each other over problems and be providing clear and accurate information. Good, timely communications were stated as being essential for success in this area.

5.2.7.5 Identified Problems and Dealing with them Successfully

Construction is a complex activity and on this project problems were encountered through trying to work to a tight schedule yet also trying to procure more effectively and to make cost savings. The important thing when working with a partnering mindset is to deal with these problems. The problems, which arose, in the main, were based around whether the sub-contractors were doing the work, which they had tendered for, doing it when they said they would do it, and to the quality, which was expected.

'Basically, are they delivering what you expect them to?' (Bovis Project Manager)

The 'Building' was erected with relatively few problems. The structure, steelwork, concrete and brickwork were constructed to the satisfaction of

all concerned. Specific areas where differences in perspective or viewpoint of team members were identified included:

- Delivery yard slab
- Internal concrete floor
- Finishes
- Roofing

5.2.7.6 Delivery Yard Slab

There was a problem with the 'external' concrete contractor in that the logistics in completing the 'yard', maintaining use and handing over to the client was very complex. Despite this works progressed quite smoothly in spite of client requirements for the existing yard to remain operational and for a phased handover of the extended yard (approximately 50 lorries / hour continued using the existing facilities at London Colney during construction).

Construction problems started when the delivery yard was being concreted and a number of slabs were identified as defective. This was attributed to the fact that some slabs were cast under temporary covers due to exceptionally inclement weather, due to the need to maintain the pre-Christmas operational date, which was based upon a fast-track programme to meet the client's requirement. Also, as the yard was handed to the client and the facility became operational it is difficult to say which of the repairs that were carried out, were a result of poor construction and which wear-and-tear.

5.2.7.7 Internal Concrete Floor

The concrete floor inside the facility also presented some problems. The floor was produced in conformation to a performance specification, which was developed principally by the specialist contractor and agreed

with the project team with Northern Foods Senior Project Manager closely involved in the development, selection and procurement of this section of the project, 'the floor slab is of utmost importance to a Distribution Centre'. Site conditions for the preparation of construction of the slabs were ideal in a totally enclosed and clear environment and the floor was laid in wide bays in three days with a well tried and tested method in the UK and had been used on other projects by Haydn Worthing and Peter Goldsmith.

Two separate problems occurred, 'blemishes' which were identified as a cosmetic issue by an independent specialist which was rectified prior to the occupation of the facility; and some 'cracking' which developed adjacent to the movement joint and which will be rectified within the maintenance period when access can be agreed. As the facility was in operation throughout construction works for 6.1/2 days per week, 24 hours per day, Stuarts, the sub-contractors, had difficulty getting back on site to carry out the necessary remedial works. This problem was made worse because an SBT supervisor, Nabil, was a stickler for the specification (which was thick and fairly detailed). This temporarily strained relationships within the project team and highlights the potential for conflict to enter the construction process. The success in dealing with this problem reflects well upon individuals and the team as a whole.

5.2.7.8 Finishes

The finishes created a number of problems relating to perspectives and expectations, particularly between the architect and the management contractor in relation to changes in specification and cost savings. However, the offices were constructed to an agreed standard with the client and the users of the offices at NFT on day one were very pleased with the standard and quality of the offices provided. There is also a view, with the benefit of hindsight that further savings could be made

against the specification without in any way effecting business performance or disposal to institutional standards. The original specification proposed by the architect included hardwood skirtings and architraves and with the ongoing pressure by Bovis to really question the specification it is obvious 'the sacred cow' scenario applied and the architect criticised the finished product against his original expectations.

The savings established in this section of the project contributed to the client being able to spend money elsewhere, resulting in the demolition of existing facilities and the provision of new, with the essential added benefit of a more rational racking layout and a far more efficient business operation as a direct result. The client was given the opportunity to choose a number of solutions and he exercised this right.

5.2.7.9 Roofing

Encouraged by the project team the sub-contractor identified a number of cost savings to the SBT specification, which were later adopted and implemented. Initially the architect refused to accept the alternative specification for the roof sheeting and insisted on retaining the aluminium specification and following some hard negotiating the preferred supplier of the aluminium specification agreed to match the price of the lower industrial specification offered. This is an example of 'effectiveness obtaining higher specifications for the same cost' with the added benefit to the Client in terms of lower long-term maintenance costs. The original specification was unnecessarily high, alternatives were offered and the Client was given the opportunity to choose.

5.2.7.10 Factors which created 'tension' on site

Throughout the construction phase various tensions and conflict arose and whilst it is difficult to pinpoint the exact cause of these, various factors which were felt to contribute to the situation were identified:

- Guaranteed Maximum Price
- Programmes
- Fast-track Construction
- Contractor Capabilities

5.2.7.11 Guaranteed Maximum Price (GMP)

A common practice in the construction industry today is to guarantee the price from an early date, after the scope, specification and tenders have been analysed and agreed by the parties together with a provision for risk. This is difficult and if subsequent problems arise this can often lead to controversies or differences of opinions between stakeholders which creates tension in project relationships. What can be considered a 'scope change' and what is 'design development' has no clear guidelines and the parties need to have a good working relationship to deal with this. In the London Colney project the intent was to tender the project on specific package designs and agreed scope and to offer the client a GMP (requested by the client to satisfy the scheme funders) when the exercise was completed i.e. November 1993. Whilst this method of working is very common with developers and other enlightened clients, Bovis / Northern Foods had previously worked very closely on an open basis with all identified savings accrued being returned to the client. On London Colney, though, Northern Foods gained from the effectiveness of cost control and design on this job and NFT also gained in terms of processing additional pallets for Sainsbury's.

5.2.7.12 Programmes

Programmes have generally been arrived at by the following sequence:

1. The Client negotiates to provide a service (in this case distribution warehousing capacity) from an agreed date
2. The project Team then commences to prepare Scheme information from which a programme and a cost plan are produced.
3. Further negotiations take place during which the scheme and cost plan are adjusted including any Client changes

The programme strategy developed and agreed with NFT reflected very much the constraints imposed by the ongoing business and the requirement to develop the project on a sequential basis to ensure the existing business ran with the minimum of disruption. Indeed the facility was operational 2-3 months earlier than the original target agreed with NFT / Sainsbury. The view was also expressed that in more complex processing plants the construction side of the development process is squeezed harder by the Client than plant installation and the production run. However, it may be that as these activities take place in a controlled environment their management is less complex and appears to run more smoothly.

In the course of the project, 'conflict' arose as a consequence of the programming considerations of the contract which were felt to be tight and at risk from adverse weather. The programme was developed on a sequential basis to reflect the operational constraints of the NFT existing business and to minimise disruption with one key milestone being to develop a substantial portion of the new yard to enable the RDC to meet the demands of Christmas trading. The extension to the yard was

disrupted initially by exceptionally inclement weather but it was necessary to continue working through these conditions to achieve the objective. The surface finish of six slabs did not comply with the specification and were replaced. The timing of the remedial works was an issue upon which the parties disagreed. The Bovis PM wanted to leave these works in initially, and to take out at a later date so as, (a) not to lose momentum on the programme, (b) not to hit the sub-contractor early on and, (c) lose face and run the risk of reducing site morale. This was agreed between the Client, R&P, Bovis and the Sub Contractor. If there is a question of compliance with specification Bovis policy is to take an objective view based upon the following criteria:

1. Non-compliance - Bovis will condemn and seek remedial options
2. Compliant - Bovis will accept
3. Marginal Issues - Bovis will recommend an independent report and investigate options available to the Client / Sub-Contractor

5.2.7.13 Fast-Track Construction

The project was 'fast-track', working to strict deadlines for a demanding client. When attempting an ambitious method of working combining the fast track construction of a building which is not fully specified, effective communications and accurate information are essential. Bovis operate a Quality Management System to help achieve this and the sub-contractors contract documentation is very clear on the responsibility and duties of the trade contractors.

Fundamental problems can be experienced when minor defects are not corrected as and when they occur.

'These need to be corrected as you go along, either hourly, daily, weekly it doesn't matter as long as you don't allow things to build up'. Bovis

Project Manager

If these are not rectified more work may be carried out over the top of defective work and then needs to be redone itself (e.g. defective plaster on wall, -painted, -room carpeted, all to original programme and then the plaster is removed). Such activities can create bad feeling and frustration and can sour site relationships. Trade contractors are totally responsible for the certification that all their work is compliant with the specification and also have a duty and responsibility to ensure they check and advise of any faults in any sub surface to which their work is fixed.

5.2.7.14 Sub-Contractors Capability

The capability of sub-contractors in meeting programme deadlines and reaching quality standards of workmanship were identified by Bovis and the Client as essential for a cohesive and successful project.

Related to this factor, the tendering process also presented various challenges to the team, although procurement was completed in conjunction with a pre-agreed design programme to allow for the maximum design programme and still meet the target completion of November 1993. All team members were actively encouraged to contribute to the proposed tender lists, with the aim being to produce a list by consensus. All bids are analysed and selection is again a team decision conducted in a totally open environment. Through the tendering process savings were made from the agreed budget, as sought by the Effectiveness Initiative. The perspective of the Clients Project Manager was that they didn't always buy better, in fact in some cases they bought less. This is in fact part of the Effectiveness Initiative, reducing the

specification where it was deemed to be over specified and cutting out wasted costs. The Client's Project Manager felt there was problems with value-for-money but he acknowledged that this is a difficult situation and illustrates the feeling that professionals always feel that they could buy better on every job they have worked.

So, to summarise problems faced during construction, all three of the above factors *cost, timing and capability* are closely related and one will affect the other. A 'ripples in a pond' analogy was used to show that the action of an individual person / stakeholder can affect other people and the project as a whole. In light of the problems experienced, key factors upon which to concentrate future efforts were identified as:

- Selection of client representative
- Contractor selection
- Programming of the works

5.2.7.15 Safety

A very positive aspect of the project was the safety record. Within the project emphasis was placed upon safety and London Colney was a very safe site with only a few minor accidents. The project won the Bovis Safe Site award, 1994.

5.2.7.16 Team-working

The Effectiveness Initiative, incorporating team working, created high expectations for this particular project. Team building was set to be a continuing process with champions allocated to promote development in specific areas reached by consensus at the initial 'Team Building Day'. The team-building day attempted to develop organisational structures and working relationships which would have developed naturally during the course of a project through work commitments, occasional nights out and

'key-moment' celebrations. Three team-building days were planned - one at the beginning, one in the middle and one at the end as part of the Project Quality Planning Review which was held on 14th September 1994 in an open and frank atmosphere.

Social activities on site were good with the organisation of pub-crawls, treasure hunts and other activities, which helped, develop the sense of togetherness and team working. Most team members used the same hotel and there was a considerable amount of rich, informal discussions during the evenings which Bovis feel contributed in some way to the eventual cost savings and achievement of milestones during the programme. Also, the Clients Project Manager, was on-site for 3-4 days / week and he shared a hotel with other 'team' members. This provided an opportunity for people to 'gel' if they got involved in the various activities, which were taking place. This helped to establish and develop team working. The structural engineer stated that he was living in a hotel with various sub-contractors, steel-erectors, and electricians and roofing contractors, which created an opportunity for an off-site social life and informal team-building activities. Potentially this created a problem situation where everybody is 'too close' and could not 'escape' from the project at the end of the day. There was a potential danger here that people may get too 'close', and this familiarity may compromise professionalism.

For any team to function effectively there is a need to understand others, in particular their strengths and weaknesses, to maximise output on the project. With regard to team-working the importance of 'chemical-selectivity' was stressed by the architect and the problem of trying to force the development of 'teams'. The architect expressed the opinion that team building is a naturally occurring phenomenon which you can do very little about although bringing people together in a 'non-critical' situation seems like a good idea. So, the concept of team working is

good, but how you go about setting it up is very important and over-familiarity should be guarded against.

5.2.7.17 Value Engineering

Value Engineering (VE) was a buzzword on this project thanks to the Effectiveness Initiative. Although a formal Value Engineering exercise did not take place the principles were very much part of the philosophy of the Effectiveness Initiative. Value Engineering is not compromising or merely providing a cheap job but encapsulates the ideas of 'value for money' and 'fitness for purpose'. Regular meetings occurred to discuss the current options that were being progressed although the fast track nature of the project sometimes left the architect feeling that some poor decisions were made. As the project progressed and the SBT design solutions were challenged, a reluctance built up by the Client's Project Manager and the architect to many of the ideas developed. Bovis always queried the specification with a view to developing cost savings and sought alternatives from the contractors even after appointment, and were continuously looking to make further savings. The Client was presented with a choice and decisions were taken. Any selected alternative / option is what Northern Foods actually pay for with the savings used for additional scope.

Within this scenario of seeking better 'value', trust was an important factor. For example, if particular finishes or approved samples of items were not available and replaced with an alternative, which sometimes may not have been the first choice of the architect, and if this occurs a number of times the feeling of 'is this unlucky or is it planned?' starts to grow. The trust in the relationship can be affected and once this is gone it is difficult to re-establish in a short space of time. This is a major problem as it is continually stated that trust is essential in order to build effectively.

5.2.8 Post-Construction Phase

Upon completion of the project post-construction activities progressed relatively smoothly. The Practical Completion Certificate for the project was issued on 31st August 1994.

5.2.9 Final Accounts

The project was 'completed' and handed over on time. Sub-contractor work package accounts were settled without 'major' disputes and the job was completed without a single 'claim', on a project where considerable additional scope was funded, procured and executed within the original timescale.

5.2.10 Final Completion

However, two years later there were some particular problems, which resulted in the final completion certificate being delayed. However progress at the time of this case study had been made in resolving the issues at stake. The end of maintenance Period Inspection was held in September 1995, approximately 12 months after Practical Completion, resulting in the clearance of all items and issue of certificate within 4 months. Snagging was completed successfully despite the fact that the building was occupied, which created logistical problems in carrying out the necessary works. There were many instances where sub-contractors came back and tried to complete their snagging works only to be turned away by the NFT Shift Foreman. However, the Certificate of Making Good Defects was issued on 2nd February 1996.

5.2.11 The Project Review

The 'team' reviewed the project in a formal recorded meeting on Wednesday 14th September 1994, 11 months after the initial 'Team

Building Day' and after the improved facility was operational. The agenda for this meeting was as follows:

- what did we set out to achieve?
- what we actually achieved?
- what worked for us?
- what did you personally get from the project?
- what didn't you get / could have done without?
- what is our 'wish list' for the next project?
- how will we make this happen?

This idea of trying to do something different, challenging the perceived ideas about how construction operates came about in part due to the long-term relationship between Bovis/Northern Foods and the trust which had been established over the years due to successfully completed projects, and relationships between key people in both organisations. Things, which were tried here, could not have been attempted with a 'virgin-client' and this is an example of a long-term relationship providing an opportunity to innovate and attempt to implement novel solutions.

Bovis and Northern Foods have a de-brief on all projects and without exception review the performance on the relevant project and attempt to identify improvements in performance for the future. A general problem within the industry is that people move on to the next job, new project arise, and there is little time or money available to review projects and to learn lessons. This task is an essential element of the continuous improvement 'cycle'.

5.2.11.1 Celebration

It was noted that no formal end of contract celebration occurred on this project although informal celebrations were organised by the project

manager. This project was very much the extension and redevelopment of an existing site with workload 'tailing-off' with alterations within the existing building. On similar projects it is difficult to establish timing for a final celebration and the London Colney project was no different in that respect.

5.2.11.2 Lessons for Future Projects

This section identifies specific lessons learnt from this case study and presents the case-study findings in terms of key factors for improving future practice.

5.2.11.3 Perspectives on Cost, Time and Quality Performance

A potential barrier to partnering which was clearly identified during the conduct of this research was the differing perspectives or viewpoints, and also the cultures and traditions of the participants. This conflict can creep into the project based upon individual (personality clashes, differing philosophy), organisational (designers and builders for example) or institutional (for example RIBA, RICS or CIOB) perspectives and cultures. Issues where these differences tend to manifest themselves relate to the three-way relationship between cost, time, and quality. An example of this from the London Colney project was the initial design specification and the tension, which changes created between various members of the team. Further, an holistic viewpoint is required capturing the 'big picture' of the project. However, team members must bear in mind the need to deal with details, the little picture if you like, and which are potentially the cause of disputes. So in a project such as London Colney there is the need to reconcile a management and an engineering perspective.

On projects where an innovative approach to the construction of the facility are being adopted, 'traditional' viewpoints became a barrier to the

new way of working and created frustrations. This may have provided a useful 'check' on the drive for cost savings but clearly illustrates the need for understanding of other team members in the pursuit of a smooth job. Selection of team members was consistently highlighted as an area for development on future projects. Good partnership allows things to be resolved and this is achieved through understanding and commitment to a common cause.

5.2.12 Case-Study Findings

Key factors identified during the interviews and discussions which were considered to be critical in the development of successful partnering arrangements and discussed in the main body of the text can be identified as follows: -

- developing the spirit of team-working and building relationships
- effective two way communications between 'multiple' stakeholders
- openness and honesty which help to establish trust
- maintaining trust and honesty (very difficult to establish, easy to lose)
- importance of individuals and the need to deal with problems of personality clashes
- selecting the right sub-contractors with appropriate capability and expertise
- understanding roles & responsibilities of project stakeholders and understanding their relative strength & weaknesses
- right first time philosophy and amending defects as soon as possible help in establishing the culture of the project
- realistic programmes and accurate cost-planning facilitates the smooth progress of a project
- identification of appropriate levels within relationship for problems to be resolved

Further work needs to be done to attribute these key factors to the appropriate level or category within the relationship. Due to the number of people who mentioned 'team-working' as very important a little more shall now be said about this key factor.

5.2.12.1 Team Working

The importance and need of forming a 'cohesive' team to produce a successful and well-perceived project was stressed. This need to form a team operated across the spectrum of participants and is seen as a critical activity. In this instance the 'Team' consisted of Northern Foods, the Design Team, Bovis Cost Consultancy, Bovis Management and the sub-contractors.

Human nature plays a very important part in this process and the fact that particular individuals 'gel' but others do not is difficult to understand and was considered to be 'one of these things'. The site was considered to be operating as one team but for the purpose of analysis a number of distinctive relationships can be identified:

- Client - Contractor
- Contractor - Sub-contractors
- Relations with Design Teams

These relationships formed due to the nature of tasks and responsibilities of the parties concerned and developed successfully or not due to the individuals involved. Also a number of the relationships were based upon previously completed jobs, which had been successful.

5.2.12.2 Client - Contractor Relations

This part of the 'team' was well established and the relationship of key individuals moved to the London Colney project from previous Northern Foods / Bovis projects. Dave Short, senior contracts manager for Northern Foods, was especially tuned into this relationship and along with David Brealey was considered the key individuals on this side of the Northern Foods/Bovis long-term relationship. Dennis Bate and Haydn Worthing were key people on the Bovis side. On this project the idea of adopting the Bovis Effectiveness and strengthening the partnering arrangements grew from the enthusiasm of Bate and Brealey, Short and Worthing carried the torch of effectiveness onto the job. The relationship between Hadyn Worthing and David Brealey which was beneficial for the 'partnering' arrangements overall is a professional relationship based upon mutual respect and trust which has grown over a decade with a 'track record' of successfully completing a number of difficult and demanding projects. During construction Hadyn was on site roughly once a week, David once a month. The client's Project Manager on the project was new to this relationship and came from a 'tender' background and initially it was felt that he did not understand management contracting and the concept of working together (a joint venture between Northern Foods/Bovis/Sub-Contractors). However, he stepped onto the relationship 'learning curve' and by the end of the project the understanding was developing.

The essence of this relationship is that if problems arise the onus is on the parties concerned to go out and address the problem rather than allowing problems to mount and eventually be sorted out through the courts. Between Northern Foods / Bovis the roles within the relationship allows Bovis to manage the sub-contractors work packages and any conflicts which arise. The client takes a 'hands-on' approach in terms of innovation, continuous improvement goals and the seeking of alternative

solutions. To maximise potential benefits the selection of the 'client's decision maker' is critical as is their relationship with key Bovis Personnel to:

- identify opportunities
- evaluate / develop proposals
- implement the preferred actions without delay

A close and harmonious relationship is obviously beneficial to this process.

5.2.12.3 Contractor / Sub-contractor Relations

As relationships develop between Bovis and sub-contractors computer records are kept of organisations, their experience and track record and their overall performance. Successful long-term relationships develop with companies, which are easy to work with, effective communicators and perform to required standards. Information on those which do not perform is collected, so that any sub-contractors who have a proven track record are asked to submit tenders. Contractors asked to tender are selected for specific projects very carefully and are assessed by criteria such as:

- Overall impression at interview
- Capability of managing their work package
- Understanding of what is required, competence and confidence
- 'Method statements' - ability to do work, manage work and control work incorporating quality and safety systems
- Cost
- Time
- Completed work

- References

Successful contractors generate repeat order business based upon performance and track record. There is constant feedback on all contractors used by Bovis and this information is made available to all staff via the 'Hummingbird Software System'. When selecting contractors, Peter Goldsmith (Bovis Project PM) stated that he was looking for people who knew what they were doing (an understanding of the 'nuts & bolts'), a proven track record and were people whom he could strike up a good working relationship with. The importance of 'personality' here was stressed. Conflict arises within this relationship due to non-performance, failure to meet quality and standards required. The importance of selecting 'appropriate' contractors was emphasised by Peter Goldsmith.

'To produce a quality building on time and within budget you need to put together a team of sub-contractors who are equipped to do the job required of them'. (PG)

The role of the project manager within this is that of a 'team-builder' in a sense at the beginning of the job, and maintaining the spirit and motivation of the members of that team including all sub-contractors.

Partnering plays a role in this:-

Partnering is knowing the capability of the people who you are employing and working together to maximise this capability in pursuit of mutual objectives'. (PG)

5.2.12.4 Design-Team Relations

Rigby & Partners and Northern Foods had a long established relationship of 20 years, and Rigby's perform the majority of all structural design work for Northern Foods. A number of projects have been completed with London Colney being the most recent. Northern Foods were acknowledged as market leaders in the production of 'state of the art' buildings for the food processing industry and as a client know what they want. It was stated that in terms of the 'partnership' and successfully completed projects this was the worst one to examine, as this is the job where relationships had broken down to some extent. This breakdown was considered to be at a 'personal' level rather than a 'company' level. Upon reflection it was also stated that this was probably the best project to examine for exactly that reason, offering greater opportunities for learning about managing projects, priorities and relationships.

As demonstrated by some of the content contained in this case study, personal clashes did develop due to the presence of two headstrong individuals on this particular site who possibly were only paying lip service to the partnering process and maybe had not fully understood the philosophy of the project. It is a testimony to the management 'system' that the job has been viewed a success. That said, there are obviously areas for further improvements in the future and specific areas were identified following a 'warts and all' critical de-brief. The possibility of success within all these relationship was summed up by the need for the following factors to be in place, without which it was unlikely to produce positive results:

- Quality processes
- Appropriate attitudes

- An element of good ‘chemistry’, co-operation

This is important as possessing both the necessary quality ‘processes’ and an appropriate collaborative attitude is not sufficient without an element of chemistry within the relationship and between the parties involved. This is clearly illustrated in the London Colney project where quality processes and appropriate attitudes were in place but the relationship between certain stakeholders could have been improved. This case study would therefore suggest that the ‘partnering’ concept here would seem to have revolved around softer human issues; rather than hard, ‘scientific’ measures which were considered separate to the partnering and were embodied in Bovis Improvement Initiative and other Bovis QA procedures.

5.2.12.5 Continuous Improvement & Best Practice

‘Building as a process is quite easy: yet it is unnecessarily complicated by woolly briefs, interfering clients, poor information flows from Clients to Design Teams and poor response by contractors.’ (Project Architect)

When the next Bovis / Northern Foods job arises specific lessons which could be learnt from London Colney and the effectiveness initiative and implemented as a continuous improvement measure are detailed below. These recommendations take the form of best practice as identified from the London Colney project:

- Focused ‘set-up’ meetings as practiced at London Colney, bringing together ‘interfacing’ trades to establish lines of communication.
- Extended brief for Bovis Cost Consultancy to allow for improved cost-control of ‘design-development’.

- Need to agree 'cost-reporting' system to client at early stage and stick to this. This would be based upon key indicators and would result in more effective cost controlling, rather than merely cost reporting.
- 'Client - centred' Project Manager, as used on London Colney, with relevant skills, experience and understanding is beneficial maintaining good working relationships at difficult times in the relationship and in delivering a successful facility.
- Maintain rigorous sub-contractor selection criteria.
- Identify clients clearly (problem of multi-layered clients), and have clear guidance from the client what is being built at an early stage. Once this is established, freeze design as early as possible to help control variations. It was acknowledged that this can be difficult in reality due to the current nature of the construction business and the flexibility of the design process is often required to maximise business opportunity to the end user.
- Clarification of performance requirements at early stage and relate this to clients requirements when developing the specification.
- Involve contractor at an early stage to provide advice upon 'buildability' and lead in times for programme purposes, and help to reduce any over-design. Identify clear milestones and provide information to the client regarding programme, cost and construction.
- On-site design offices are essential on similar projects to act as the interface between design completed at the Designers office and site demands. The increased use of IT systems this is now becoming the norm and gives an immediacy and ability to clarify problems within the project environment. Also, the permanent on-site arrangement allows for full integration into the project team.
- Rectify defects as and when they occur, rather than allowing them to accumulate which results in lots of abortive work and causes

frustration for all concerned. Agree to sample rooms standard and stick with it.

- Develop / use form of building contract which protects everyone's interest.
- Reduce layers of management, seek to simplify management structures and communication channels

The Quality Management / Quality Assurance Systems which Bovis were operating on this site provides a means of performance measurement in terms of quality control and conformance to the specification and within a culture of continuous improvement the information collected feeds into the procurement process for new jobs.

5.2.12.6 Conflict in the Construction Process

The traditional relationship of 'client and builder' sees a general conflict of interests in operation. The builder is a commercial organisation, a construction company who are in business for turnover and profit; on the other hand when the client procures a building they want as much building as possible to the highest standard at the lowest possible price. Naturally this situation creates potential conflict situations, which need to be managed. Partnering may be seen as a possible solution to any conflict, which arises.

This 'traditional' view, described above, has never been the relationship between Northern Foods and Bovis. The typical situation sees Bovis undertaking to provide services to Northern Foods for a 'fee', the same principal as the other professionals selected on the project. Bovis then act in the client's interest to secure the clients objectives. Bovis feel that rather than in the above scenario, Northern Foods seek the 'correctly sized building to the relevant specification (for the operations being

undertaken) at the lowest price'. A very different situation which does not lead to conflict and the process is very much geared to keeping the clients interests paramount.

5.2.12.7 The 'Nature Of Building'

Reasons why the activities on a construction site were not more like factory production were given as 'low-tech' labour in a hi-tech industry and the lack of a 'clinical' standard of components forming the interfaces to the 'built' product. An example given was of a bricklayer building a wall to specified tolerances, a joiner fitting a door to specified tolerances and then a plasterer following on but whose work is affected by previous work to tolerance levels and his quality is affected. A method to improve this situation was suggested and this would be to adopt a single-point of contact covering a variety of related work packages and maybe to reduce the number of work packages on a project.

Also, there was consensus that bringing together designers and contractors earlier in the process would be beneficial to project delivery. The Design Team and Bovis developed the design on this project to briefings from the client but were continually looking to deliver even further benefits that could be identified in the market place during the procurement phase. This leads to the idea that integration of design and construction can produce efficiency gains and the activities pay for themselves in terms of cost savings for the client.

5.2.13 Summary and Conclusions

5.2.13.1 London Colney Summary

The project was completed successfully. There was a good spirit amongst the team despite the problems, which surfaced during the project. The end product, a regional distribution centre became operational 2/3 months

earlier than had been originally anticipated despite an increase in scope and additional works; considerable cost savings were established during the course of the project and over specification was reduced which enabled the Client to buy more facilities from a 'wish list' resulting in a more effective business operation; and the regional distribution centre was constructed to a good quality and specifications could have been further reduced and still achieved 'institutional standards'.

Positive aspects of the project can be summarised as follows:

- overall completed on time and existing facilities remained operational throughout construction works
- early completion of elements within the project
- success of the Value Engineering initiative - all designs were questioned resulting in reduced over design (e.g. roof sheeting example)
- Increased Scope at reduced cost - cost savings established were used to fund additional facilities from a pre-determined 'wish list'. This in turn led to increased efficiency of the NFT business.
- Won the Bovis Construction 'Safest Site Award 1993'

However, as can be expected with a continuous improvement initiative a number of areas were identified which could have been improved. The identification of these areas and a level of disappointment may have been due to original high expectations, increased through the profile of the 'Bovis effectiveness' initiative. These 'high' project expectations did not fully materialise, although the establishment of high expectations and the movement towards these goals is an essential part of 'continuous improvement'.

Negative aspects of the project, which can provide areas for future emphasis, included:

- Over design - although the facility was constructed to design standards selected by the client from options presented
- 'Sacred cows' - feeling that designers need to be more pro-active in relating specifications to 'client wishes' not seeking to talk up design / quality and resisting change
- Effectiveness initiative resisted in some areas - change in attitude is required by all team members. This is difficult and team members must be selected carefully and be committed to 'new ideas, change and to be pro-active.
- Management 'frustrations' due to a number of 'team' members with more 'traditional' views of the construction process, which led to, missed opportunities.

On reflection, Bovis felt that the overall construction process was improved significantly in some areas, and, although not to the same degree in other areas, the important thing to highlight is that progress was made. The basis of continuous improvement from Japanese management literature is a number of small gains over a period of time rather than big leaps followed by stagnation.

5.2.13.2 Review Of Effectiveness Initiative

The project provided lots of management frustrations for a relatively small, un-complicated job. An Effectiveness Initiative review document was produced post-contract and emphasised the outcomes of the project, not necessarily the process involved in achieving these outcomes. Cost-savings were made on the project, which enabled Northern Foods to buy more than they originally anticipated, resulting in a better scheme for the

operation of NFT business. The 'value engineering' as the project team progressed the issue of 'cost savings' on a continuous basis and in this sense emphasised cost not quality. However cost and quality are always related and the client was given the options and the client made the final choice. From some perspectives, a problem with the effectiveness / cost-saving initiative was that the scope was increased through increased expectations but the budget was not. Without complete understanding and support from participants for the concept of the Effectiveness Initiative this view is maybe understandable.

Despite these problems the regional distribution centre was operational 2/3 months early and the client was satisfied with the completed facility. The problems faced in the construction process may be considered as usual due to the complex nature of construction and the number of parties involved. The important point to note is how these were dealt with in a positive and pro-active manner.

5.2.13.3 Case Study Conclusions

The case study identified a number of key factors and suggested areas where future improvements could be made (Please see the summary tables at the end of this section). In a sense these relate to a project-specific relationship, though the longer-term nature of this relationship means that additional benefits may accrue. Surprisingly the need for a match between management styles and cultures of organisations was not explicitly mentioned, although this may have been due to an intrinsic level of synergy and understanding, but the importance of individuals and personalities was continually emphasised, maybe due to some breakdown or clash in this area. Also, an interesting observation can be made in relation to the levels of activity within the partnership.

The feeling was that there was scope for disagreement and disputes at both managerial and operational levels. As long as this was not too traumatic the relationship is able to continue due to the importance of the strategic level within the relationship. Understanding the differences at each of these levels needs more work in relation to the most appropriate form of team building and the process by which the teams work and evaluate their performance. One thing, which can be said, is that efficient and effective communications remain absolutely essential and the power of information technology must be embraced. For partnering to be successful there is a need for understanding. This is an understanding of individual roles and responsibilities and other 'stakeholder' positions. For this to work the onus and responsibility is shared and does not lie solely with one party and the importance of key personalities cannot be stressed enough.

5.2.13.4 Summary of Partnering and Recommended Key Principles

5.2	Effective (Aspects of Partnering which were effectively implemented)
1	Long term relationship between Bovis/ NF helped generate trust and a <i>partnering culture</i>
2	Key staff familiar to previous Bovis/ NF projects moved to project
3	Selection of 'clients decision maker' enables champions to drive sub processes
4	Performance logging of participants for future reference
5	Long term relationship between principal design consultant and NF
6	Effective Value Engineering exercise
7	Pre-determined client wish list
8	Initial team building exercises (5.2.4)
9	Initial strategy meetings to identify performance targets and improvement areas (5.2.4)
10	Long term relationship enabled opportunity for innovation (5.2.6.3)
11	Selection of sub-contractors with proven track record (5.2.6.3)
12	Project team involved in tender appraisals (5.2.6.4)
13	Independently facilitated team working meetings with Subs (5.2.6.5)
14	Regular meetings between PM and Trade Contractors (5.2.7.1)
15	Commitment to Just in Time Supply (JIT), (5.2.7.3.)
16	All participants encouraged to contribute to Tender lists (5.2.7.14)
17	Final selection of sub-contractors is team exercise (5.2.7.14)
18	Effectiveness Initiative implemented to reduce waste (5.2.7.16)
19	Formal team building days (5.2.7.16)
20	Formal debrief and project review undertaken (5.2.11)
21	Effort put into resolving problems effectively (5.2.6.4 & 5.2.7.5)

Caution points identified include:

Caution Points (ineffective aspects)

- 1** *Partnering culture* was more difficult to develop between other project participants (non contractor-client)
- 2** Conflict issues manifested themselves relating to cost, time and quality issues
- 3** Traditional viewpoints became a barrier to the innovative way of working, leading to frustration.
- 4** Over design occurred
- 5** Some relationships had broken down at a personal level
- 6** Upper management ignored opinions and requirements of operational personnel
- 7** 'Sacred cows'. Designers didn't always relate specs to client wishes
- 8** Continuous improvement not rigorous
- 9** Lack of independence of Bovis QS (Bovis Cost Consultant)
- 10** Project team initially unclear of brief
- 11** Value engineering of initial design caused conflict

Key Recommendations (By Team For Better Future Partnering Performance)

- 1 Develop a spirit of team-working, openness and honesty
- 2 Produce Mission Statements to clarify objectives
- 3 Effective two way communications between 'multiple' stakeholders
- 4 Focused 'set-up' meetings involving relevant Sub Contractor's to establish lines of communication
- 5 Use Champions to drive particular aspects (Effectiveness Initiative)
- 6 Understand and know the client and use a client centred PM
- 7 Clarify performance requirements early
- 8 Selecting sub-contractors with appropriate capability and expertise
- 9 Understand roles & responsibilities of project stakeholders
- 10 Understand relative strength & weaknesses of project stakeholders
- 11 Right first time philosophy and amending defects as soon as possible help in establishing the improvement culture of the project
- 12 Realistic programmes and accurate cost-planning facilitates
- 13 Identification of appropriate levels within relationship for problems to be resolved
- 14 Develop use/ form of building contract which protects everyone's interest
- 15 Seek to simplify management structures and communications channels
- 16 Early involvement of the contractor
- 17 Rectify defects as and when they occur
- 18 Reconcile Management and Engineering Perspectives (5.2.11.3)

5.3 Case 2: Peel Holdings/Bovis Construction

'A benefit of partnering is that it facilitates effective problem resolution and can also prevent certain problems occurring in the first place. This is important in ensuring that the completed project satisfies customer requirements.'

(Dennis Bate, Director, Bovis Europe, 24/9/96)

The Trafford Centre is the result of a creative partnership between client Peel Holdings, Construction Manager Bovis Construction, Architects Chapman Taylor and Leach Rhodes Walker, other consultants, numerous sub-contractors and a host of some of the most popular British retailers including Selfridges in their first venture outside of London. Following preliminary discussions with both the client and construction manager, and informed by other research, 5 key activities for successful 'partnering' in construction were identified. These form the basis of the investigation, the five key activities are as follows:

1. Identifying Objectives
2. Team Selection
3. Team Building
4. Management and Control of Project Execution
5. Project Review

Due to the scale of the project (approx. cost of construction excluding fitting out £200 million) the main data collection activities during the construction phase were focused upon one work package within the whole development, being the multi-storey car parks. This report

illustrates key aspects of the partnering relationship at the Trafford Centre that can help to deliver a successful project. Also, some of the benefits that can arise through the adoption of such an approach are presented. Illustrating the complex nature of construction and the various levels at which co-operation is required (strategic, managerial and operational) the case study examines the management of the car park package. Here we see the development of the relationships and how the brief is met. This illustrates the process employed throughout the development and for other project work packages that totalled over 70. It also identifies the nature of the design and construction process, how this was managed and the various interactions between participants that occurred.

5.3.1 Collection of Data

The data was collected through regular meetings and semi structured interviews with key project participants as well as a review and analysis of relevant project documentation pertaining to partnering and associated management principles.

The principle team from Bovis were also involved in the production of a video entitled 'Cranes in the Mist'. This provides clear views from the Bovis perspective regarding partnering on the Trafford Centre project.

5.3.2 The Project Background

Following post-war industrial decline, the 1980's construction boom provided Peel Holdings an opportunity to develop a large redundant site in Trafford Park, one of Europe's largest industrial estates. The site had excellent communication links in an extremely strategic location and would have been developed sooner but for various commercial and practical reasons. An initial possibility was included in outline proposals for an Olympic stadium as part of Manchester's unsuccessful 1996

Olympic bid submitted in 1991. This did not materialise as Atlanta was awarded the games and the site remained undeveloped. However a catalyst that activated the eventual development was described by Peel Holdings as the demand for an out of town retail complex in the North West of England. Final planning permission for a regional shopping centre, The Trafford Centre was given in 1994 (this was deferred on appeal by 10 councils; eight which constitute Greater Manchester plus Salford and Trafford). Twelve months later (May 1995) The Trafford Centre was finally given the go ahead, 9 years after the process began, when the House of Lords turned down this appeal.

This region of the UK at the time was the only centre of large population without such a facility. It had been identified that customers were travelling to these facilities in other parts of the country and this latent demand needed to be met. This set in motion a series of events that will lead to a million square foot regional shopping centre opening in Autumn 1998. At Trafford, the client Peel Holdings, an organisation with many property interests in Trafford Park and the surrounding area, approached Bovis to manage the construction of a large shopping city on vacant land in Trafford Park. For a client with a reasonable sized construction portfolio, Peel decided to procure the Trafford Centre in a manner that was distinctly different to traditional company policy. This was done primarily due to the nature of the Trafford Centre project, in particular its scale, complexity and uniqueness. The approach that Peel adopted at Trafford was to negotiate the contract directly with Bovis Construction and this set in motion a partnering arrangement that is described in this case study . The fact that the project was negotiated both required and helped to develop an exceptionally good relationship between the client and contractor at a strategic level with John Whittaker (Peel) and Dennis Bate (Bovis) key players.

Client	Peel Holdings
Concept Architect	Chapman Taylor
Detailed Design Architect	Leach Rhodes Walker
Management Contractor	Bovis Construction
Structural Engineer	Bingham Cottrell
Mechanical and Electrical Consultant	James Stewart
Quantity Surveyor	Deakin Jones

Table 15: Key project participants

The partnering process at Trafford involved bringing together these experts and other organisations that formed the construction team. This process is described in the next section of the report.

5.3.2.1 *The Partnering Process at Trafford*

'Relationships are only one aspect of partnering. Partnering can only be said to work if the scheme (any scheme) is delivered on programme to the required specification and to budget. There is no point in everybody having a wonderful time if the scheme turns out to be a financial and architectural disaster.' (Extract of letter from David Glover, CM Peel Holdings, to Prof. Rachel Cooper, Univ. of Salford, 28 March 1996.)

It can be surmised from the literature review and initial case studies that it is beneficial for a client to have a good working relationship with those responsible for managing the construction process. This was especially the case at Trafford where Peel Holdings needed somebody to design and construct a regional shopping facility for them. Their first stop was Bovis Construction who they knew had built a similar facility in Sheffield at

Meadowhall. The initial trigger was that Peel wanted a similar facility to Meadowhall but more current and state of the art. Peel wanted to harness the expertise that had been developed at Meadowhall to benefit from the learning that a number of the organisations involved with Meadowhall had been through. This resulted in many people and organisations that had worked at Meadowhall subsequently coming to the Trafford Centre development. New team members who had not worked at Meadowhall were also brought in and when they came together, they too started the process of developing a professional working relationship.

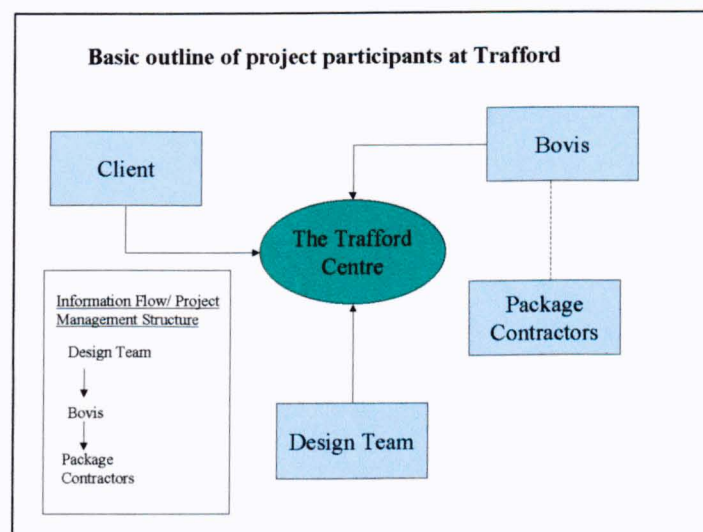


Figure 17: Basic outline of project participants at Trafford

From the outset of the project the spirit of partnering and collaborative working was embraced by the various stakeholders, particularly the client who understood that this was a more effective way to ensure that his objectives were met than following a traditional adversarial approach to construction. However, the process of setting clear measurements criteria referred to in the quote by David Glover above clearly identifies the need for specific targets to be identified and achieved in terms of cost, time and quality and the need to establish a management system that can deliver against these criteria. Implementing such a system and process

established a particular attitude or culture on the project. Partnering was definitely a means to an end rather than an end in itself. In this instance partnering was a ‘culture or mindset’ rather than any particular process or set of activities to be followed. The aim was to employ the people who had appropriate experience, expertise and competency thus ensuring quality management procedures would be in place aimed at successful project completion.

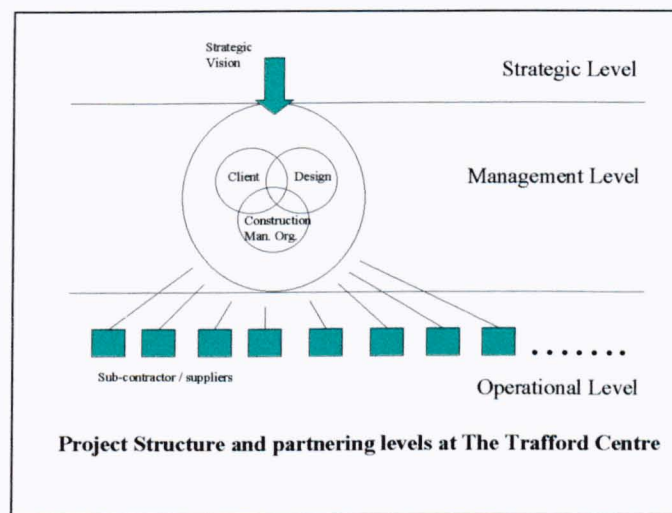


Figure 18: Project structure and partnering levels at Trafford Centre

Partnering occurred at a number of levels for example technical teams (involving Bovis, design team, and package contractors and client Bovis, design team), at a policy/managerial level. At Trafford the client was the driver behind the partnering, constantly encouraging the core project teams to set tough targets and to meet these targets. Core principles of this partnering process will now be discussed in more detail.

5.3.2.2 Identifying the Clients Requirements

The client's vision for the Trafford centre was a quality shopping 'experience', this was reflected in a high quality specification with the client prepared to spend more than was necessary to design and construct a purely functional building. The baseline for the project specification was Meadowhall. However as this facility was 8 years old this could only ever be considered a guide and as both tenant and customer expectations with retail experience had moved on, a high level specification was to be expected. This in fact had been part of a process of increasing expectations from 'shopping centres' in the last 15-20 years and which are likely to increase in the future.

Figure 19: Development of shopping 'experience' in the UK in the last 20 years



At Trafford, John Whittaker's (Peel) aim was to create the 'best shopping experience in the world; an experience with nothing to equal it' (1). The client wanted an ageless, classically designed building incorporating the most innovative construction and entertainment technology, which could be enjoyed by the customers on a number of different levels. A visit to the Trafford Centre is to be a whole new retail experience:

- A shopping experience
- A leisure experience
- An experience of the building itself

Critical issues for the client were that they received value for money from their capital investment, that flexibility was built into the building and that the centre opened on time. This was of utmost importance due to the potential of a large loss of rental income. Every project starts with a need, desire or vision of the client. In retail, as we near the end of the millennium, what is important is the added value that a facility can provide in terms of the customers' leisure (both shopping and retail) experience. The process of identifying requirements began many years previously when Peel realised that they had a prime development opportunity and at Trafford the client was very clear what he wanted and the level of quality he expected. The project was quality driven and the finished product had to look 'fantastic' but also to function as well as it looked.

The concept behind Trafford started with the Meadowhall drawings and this was the basis from which the scheme developed. However, allied to this concept for the building, a concept for landscaping existed and a concept for transport and accessibility. This provided a holistic viewpoint to build up a brief and develop a nuts and bolts design, driven by what the client wanted. The structure identified in Figure 18 was the vehicle with which the client's dream was first conceptualised, engineered and designed before finally becoming a physical reality. The briefing process involves a series of design meetings and technical meetings where this dream slowly becomes more concrete and is eventually reality. This was helped by the fact that Peel are an experienced client and their in-house

team is highly skilled, in bringing together designers and contractors as a team.

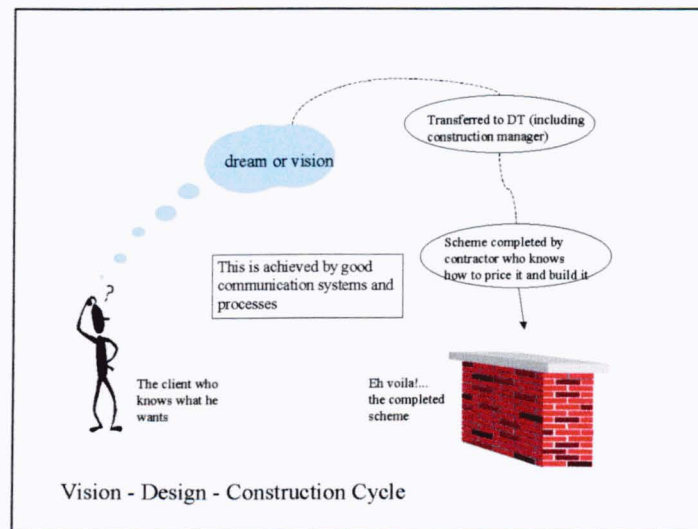


Figure 20: Vision – design – construction cycle

This vision / design / construction process helped in forming a picture of what was required by the client of the partnering process, however to turn this into a brief and then a reality, a competent team of professionals is required. The following sections describe how these were created.

5.3.2.3 Team Selection

- Peel had a very strong commitment to ‘recreating’ the successful Meadowhall team with Bovis through the use of the same ‘professional’ consultant and design organisations. Trafford presented an unusual opportunity to bring together a team who had spent a number of years working with each other on a similar project and Peel wanted to exploit this experience. Deciding to work with this team (with the exception of the new detailed design architects Leach Rhodes Walker who were introduced into the team) helped in not needing to ‘re-invent the wheel’. Also, Peel wanted to harness the experience that had been gained in the completion of Meadowhall, the

design philosophy of a 'linear mall' being the same. A difference on this project was the use of a concept architect and an implementation or detailed design architect as a result of the problems which Chapman Taylor had faced at Meadowhall in terms of procurement and implementation. Using separate concept and implementation architects provided a good discipline as each firm of architects acted as a check upon what the others were doing but the quality of information exchange became a critical area for project success (1). To facilitate this AutoCAD (release 13) was used in both practices and there was a design office on site that was linked to the head office of both practices. This office on site also provided the opportunity for decisions to be made more quickly and accurately with the immediateness of personnel. The benefits attributed to working with a team of construction professionals who had worked together on a similar project can be summarised as:

- Common learning through experience of this scale of project . Use a team with the recognised capability to succeed. By adopting a partnering approach 'hassle' be reduced as the project team had experienced the bottom of the 'learning curve' already,
- There is no need to re-invent the wheel, as the basic design philosophy (linear mall) is the same, therefore the team understands potential unique pitfalls with this type of development,
- A management contract procurement approach provided additional benefits in terms of concurrent design, tendering and construction activities reducing the total project life cycle. This was important to clients, and thus retailers, as time is a critical variable and to get the stores open and to start trading as soon as possible to earn valuable rental income was a critical success factor.

Using a team who had 'been there before' and this form of contract on the project helped with the speed of setting the project up and starting work. Also, the Centre Manager of Meadowhall, James Lindsay, was on site at Trafford during construction as he was to be the new Trafford Centre manager when it opened. Bovis were also selected for very sound commercial reasons as well for at the time of construction, Bovis were building most large shopping centres throughout the UK, and so they were the 'experts' in this sector.

For Bovis, when selecting team members flexibility and adaptability to various tasks and work conditions is important as well as a process (or client) orientation in addition to the more usual construction skills. (2). Individuals and organisations that were selected were chosen on their ability to promote continuous improvement through proactive partnerships with consultants and other team members. With the design team vision, sound judgement and innovation in managing the design process, good communication, presentation and interpersonal skills with a strong aptitude for team working were important. This also applied to sub-contracting organisations and the standard procedure on Bovis management contracts is for the project to be broken into a number of separate work packages; there were 70-80 at Trafford. For sub-contract work packages Bovis invite tenders from an appropriate number of contractors based upon the particular expertise, specialisation or trade is required, and what the market can stand (usually between 2-7). However as with any selection activity for 'team' members at strategic, managerial or operational levels *understanding* and *confidence* of requirements and ability to deliver are prime requisites (3). When selecting sub-contractors Bovis selection criteria include:

- Want people and organisations that would challenge pre-conceived ideas in relation to design and construction activities
- Previous experience and good project performance in terms of cost, time and quality
- Have a healthy good financial position and the capability to complete the job
- Employment of appropriately trained and qualified personnel

Working within these parameters a typical selection procedure can be identified as follows:

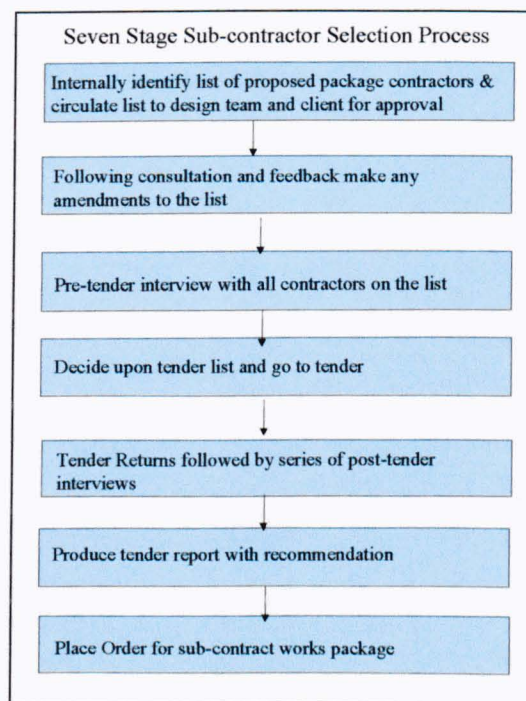


Figure 21: Seven-stage sub-contractor selection process

This process of sub contractor selection is outlined within the Bovis Quality Manual but this can only be considered a management aide as project / package specific decisions need to be taken from time to time. However this does provide a useful indication of the selection process. The initial list is identified from Bovis archives stored on computer, personal experience or with local knowledge. This process enables 'appropriate' tender lists to be compiled for each package on various projects. Also, in selection meetings the construction team stipulates that they want to see the person responsible for co-ordinating the works on site and not marketing or public relations person. This helps in making the selection in conjunction with the usual cost, time and quality criteria. The team must be able to work with their sub-contractors effectively and with the right attitude. The final decision balances both tangible and non-tangible aspects of the submission. Bovis also actively seek to develop the expertise within sub-contractors by working in a strategic manner increasing the size of jobs undertaken slowly as the sub contractor gains experience.

5.3.2.4 Team Building

The attitude of the client on this project was to change the traditional approach and to integrate the design team and contractor as soon as possible so that the contractor could offer buildability advice. The concept of 'inclusion' was key and this encouraged the management contractor to operate in this manner as well. Fortunately the nature and culture of Bovis is to operate in this way, and their 'open book' policy to resolve problems in an open and honest manner fits with such an approach. 'By working together and seeking an understanding of the client's objectives it is easier to give the client what he wants, when he wants it' (4). An initial problem identified by the client's representative (5) is the problem of defining partnering and the fact that every relationship is bespoke. To help initiate the relationship it is important to

maintain a high degree of professionalism so that the relationship is not compromised. The job is the most important thing yet the professional relationships and team working need to be developed. The project objective needs to be established and communicated to all construction team members (construction manager, design team and sub-contractors.

The importance of the process of relationship development and spending time and effort here was identified. For instance, the relationship between project managers is based upon both 'formal' and 'informal' meetings, telephone conversations and day-to-day activities. It was stated that although personal friendships develop between participants a professional relationship must be maintained to ensure the interests of the project are not compromised. Also the relationships between 'team' members formed on an ad-hoc basis through undertaking and completion of specific work related tasks. 'To develop trust and faith between the client and contractor it was important for individuals from both organisations to get involved and to work closely together from an early stage in the project' (6). The process of negotiation with a focus upon project objectives occurred throughout the project and relationships evolved as team members worked together. The need to change traditional attitudes was identified and at Trafford this was addressed by bringing the construction manager in and making him feel involved at an early stage by sharing objectives. This also provides some benefit to Bovis by giving them the opportunity to have an influence upon the design in terms of buildability, programming and planning. This in fact led to a major change in respect of the project's phasing and helped to facilitate the development of a successful and integrated project team and produced benefits in terms of the construction method and project programme.

In this case the project manager from Bovis was sceptical about the benefit of a 'formal' teambuilding exercise and believing that a team

spirit develops naturally and cannot be created artificially. Therefore this project no formal team building or team working exercise was undertaken, rather informal activities on an ongoing basis at all levels in the construction team were encouraged. These included sporting and social events and also work related activities such as overseas trips to evaluate suppliers and materials, such as to Rotterdam and to Dublin to examine various materials and potential suppliers. These are focused journeys that offer opportunities to learn a little bit about people you will be working with, in a 'neutral' environment. The important thing is that people work together closely to achieve objectives and can get to know each other professionally.

These trips were useful as they provided a project focus but were staged in a different setting which helped to develop other aspects of the relationship and create shared understandings. The act of developing team togetherness actually came about by members of the team spending time together, analysing problems and solving them. It was stressed that whilst a co-operative attitude and relationship between parties was to be encouraged this at no times should compromise the professional relationship and responsibility of parties. It was also acknowledged that a formal team building exercise could help to break the ice and bring the team together at an early stage.

Other factors that helped to contribute to a cohesive team were the Bovis 'Self Development Programme'. Bovis place an emphasis upon training and development of 'rounded' managers and a number of Bovis Management on the project had completed or were undertaking postgraduate qualifications (typically MSc's). Also, outward-bound type character building exercises were encouraged and it was considered 'quite an honour' to be selected to attend one of these courses. Informal team building also occurred with sporting events such as of cricket,

soccer and darts competitions between managerial staff and sub-contracting organisations. At an operational level a monthly safety award was presented to a sub-contractor on site and this became a prestigious trophy with company names engraved onto a special shield. It is also worth considering the international nature of the site with many European contractors and employees working on the site. This presented potentially difficult working conditions due to international rivalry but the fact that no problems were experienced and as such illustrates the commitment to the project objective and the feeling of togetherness that was created.

5.3.2.5 Management of Construction Progress

The importance of trust and open communication between team members was identified as crucial in ensuring that site activities progress. The role of the client in fostering such an atmosphere on site was identified as important and in this case was perceived as a top down process, indeed how the client acted had a strong influence upon how every body else acted and ultimately performed. The client taking the lead in developing a trusting environment, can serve as a secondary purpose in helping to overcome the traditional 'them and us' mentality that may exist between the contractor and design consultant. If the client can communicate openly what he requires and speak clearly about the budget available, this facilitates the interaction between other members of the construction team. Also in this case by involving Bovis early on, specialist knowledge was employed at the design phase helping to break down the traditional attitudes in the process.

Peel viewed Bovis as the 'construction consultant', they were responsible for driving the programme, setting target dates and ensuring critical information was available when it was required. Bovis commitment to total quality management and continuous improvement helped with this. Bovis formed part of the development team with an advisory role to

ensure value for money and to reassess design in terms of functionality and cost. To help with this value engineering was used an ongoing process with all package contractors.

Following initial site preparation, work started on site in earnest on the 1st May 1996 with original completion anticipated as Easter 1999 but brought forward to Autumn 1998. It was able to do this through management contracting and a combination of the various stakeholders' resources including strategy and process skills. An important aspect in successful project delivery and maintaining the relationship is the construction manager's responsiveness and problem solving capability on an ongoing basis throughout the project. Effective and open communications is an essential part of achieving this. To this end Bovis Quality Management System and the Bovis site staff provide a framework around which a project specific information system is built. In conjunction with QMS an informal project communication structure was also developed. Having a clear brief helps immensely as working with different organisations raises a number of different perspectives and Bovis managed and co-ordinated these to the benefit of the client. What is required is that appropriate resources are allocated to specific tasks and information flows to where and to whom it should. Hence, information is seen as a critical resource in ensuring construction progresses as planned. A key responsibility for Bovis was to ensure that information is available when it is required for both architects and sub-contractors to ensure that the work is carried out as efficiently and effectively as possible.

At Trafford, the client's representative was initially very hands on with Bovis in the construction activities but as the project developed he adopted more of a strategic perspective. This could be attributed to an increase in the number of activities occurring and an increased trust in Bovis personnel. The client was very active in developing the project to

his requirements and the number of design changes or developments presented a particular challenge to the team. The client's approach at Trafford was not to place blame and this enables people to be more honest – this top down approach set the pattern and established the project culture. Achieving flexibility in the final building requires flexibility in mind and attitude of the client, as innovation and working at the leading edge of technology has a potential cost resulting from errors or omissions due to working in new ways with new solutions.

Things were moving and the team were trying to build a moving project.

This created a high pressure and demanding working environment' (7).

It was also acknowledged that the response to client changes was felt to be better than it had been at Meadowhall. Regular design team meetings were held on a fortnightly basis with the contractor working towards project objectives. This helped to develop an integrated team, breaking down the traditional 'them and us' attitude and facilitated the sharing of important information. The design team maintaining a permanent physical presence on site also helped in the co-ordination of production tasks (6). The next section describes one of these production tasks – the car park.

5.3.2.6 Example of Partnering with Sub-Contractors

As mentioned previously there were over 70 separate work packages let on this project, which presents quite a management task in co-ordinating the various companies. It was noted that the majority of these packages were let under the same contract but the nature of the relationships were different due to the individual organisations involved and the Bovis management staff who were co-ordinating their works (8). However the Bovis Quality Management System provided the framework within which these packages were managed and produced an element of

conformity and standardisation in the management process. The car park package was an interesting one to look at as we had a contractor who had worked with the construction manager before, a challenging brief for the available budget that following extensive and sometimes fraught negotiations led to an innovative solution. The successful contractor, SCC, was chosen on a number of criteria and the order for which they were selected was stated as being as follows (9):

- Quality of proposed design solution and overall construction method
- Good team with appropriate ability and experience
- Cost

The car park package was a design and build contract with a programme time of 60 weeks and was developed in three stages (a) developing the concept design, (b) detailed design based upon the clients brief, and (c) construction. The design predominantly exploited extensive use of pre-fabricated techniques with pre-cast concrete following the establishment of a bespoke manufacturing plant with some on-site construction that added flexibility and quality control to the finished product. Issues of interest from this work package.

- The design process and the organisations which had responsibility for this,
- Manufacturing of the various components, and
- Construction on site of the pre-fabricated components, and,

The quality control of all the above issues was co-ordinated by Bovis, and the QMS provided a framework to do this. As might be expected on a large and complex project such as this, all elements of the pre-cast concrete package required special consideration from a variety of aspects,

including product specification, design and installation. This section of the case study will now expand upon these issues.

5.3.2.7 Design

With the car park at Trafford the construction team opted for a flexible mix of pre-fabricated and on-site construction to allow greater variety of design. Pre-fabricated or modular construction reduces the need for wet trades; allows faster assembly; and provides economies of scale, contract time and money.

Following initial conceptualisations the final design was developed on an ongoing basis and this provided savings in the construction programme for the client. This was made easier by the fact that a decision was taken to standardise the design and use pre-fabrication⁵⁸. As the project developed a number of client changes were initiated, these design developments were dealt with by the 'production team' of Bovis and SCC. The focus was on the final product and what information was required and when to produce this product. Bovis were responsible for the management of the whole project (all three phases). Weekly design co-ordination meetings occurred on site to discuss design development and other related issues and lasted anything from two to four hours. These design meetings would consider such things as how the design concept was being transferred into detailed design, quality standards, resolving design problems and any production problems that arose. These meetings were a forum to bring parties together to discuss on-going design and production issues and to exchange information. Lateral thinking and creativity was encouraged to produce innovative solutions. The aim was to resolve concept design, detail design and production differences

⁵⁸ As recommended by the Latham report.

meeting the original intention in light of the changing situation and interface problems.

Design co-ordination meetings were multi-disciplinary as it was important to understand how changes would effect each of the parties. Different solutions to design / construction interface problems were considered and these alternatives were debated and their implications upon cost, quality and programme. The aim of the debate would be to achieve a compromise solution that met the project objectives. The philosophy behind these meetings being to ask 'is that something we can agree and get on with'. These meetings were very dynamic and participants understood the need to reach an answer and make the decision to enable people to get on with the work. Cost implications of each decision were closely analysed as making decisions at the appropriate time (even with variations) can save more money than not making a decision. Whilst sitting in on one of these meetings the researcher/observer noted that the experience of Meadowhall was often referred to for design solutions. Also another consideration which was important in making decisions and resolving design issues and which would impact upon cost was the question 'have we made it before'. If a component had already been manufactured this would influence the final decision.

The design was co-ordinated on a CAD system between SCC, the sub-contractors architect HCD and the project implementation architect Leach Rhodes Walker. This enabled information to be swapped easily and ensured that information exchange was inexpensive, timely and accurate. In this process Bovis provide direction and control, 'where are we going?' and could be considered the change manager or catalyst.

5.3.2.8 Manufacturing

The project also provided the sub-contractor (SCC) with an opportunity to improve and demonstrate its capability in providing a pre-cast concrete solution to precise construction schedules. The car park structure made extensive use of pre-cast concrete components and all the production work for the beams, columns, parapet walls and decking were carried out at a factory specifically established less than 10 miles away from site where the components were produced to a high quality aesthetic finish. A high proportion of these components are exposed in the finished work, which demanded high quality workmanship and were cast in a mould with a special concrete mix to achieve the desired finished colour. Bovis also held the right to inspect the factory and its quality control mechanisms. These factory visits would occur on a regular basis where components would undergo final inspection by Bovis Management prior to delivery to site.

5.3.2.9 Construction

The management of the construction process was executed by Bovis Construction whose prime responsibility was to monitor performance of critical project success areas; namely cost, time, quality and safety. The process of monitoring performance is described next and this is a standard process for all sub-contractors on Bovis projects in accordance with Bovis QMS:

- Establish Programme for the Works
- Conduct weekly measurement exercise to ensure progress is being met (a standard form for this is included in the QMS documentation). Every other week sit down with the sub-contractors site representative for an overview meeting to see the bigger picture and ensure that activities are still on track.

- Also on a fortnightly basis review the programme for the following month. The purpose of this is to plan changes and to manage in a pro-active rather than a re-active manner. This illustrates the professional work culture and ethic that is the essence of and encouraged by Bovis QMS.
- Completion of QA documentation for external auditing purposes. This auditing is done from Bovis head office in Harrow. Bovis procedures ensure that these forms are filled in and in this instance the QA related to on-site practices and also work in the factory. (On site Liam Hayes, Project Manager Car Parks, also had the responsibility for QA).
- With this works package an important element of the monitoring of progress was 'surprise' visits each month to the factory to ensure standards were being maintained.
- Prior to work starting Bovis QMS require that sub-contractors submit a 'safe system of work', which is approved. This includes a pre-start safety checklist, method statement, employ appropriately qualified staff and a commitment to operate in a neat and tidy manner. In the case of the pre-cast components the aluminium framework, which would support the structural elements, was also checked prior to works starting.
- Bovis personnel conduct on site supervision of construction activities and there is no involvement from a client's representative. The role of the client here is to check the quality of the finished product and to carry out this function, two full time clerk of works were employed by the architects, and Scott Wilson Kirkpatrick had two building control representatives present on site each day. This illustrates the scale of the project and the extent of supervision and checking activities that took place.

- Weekly contractors meetings with Bovis Project Managers were held on every Wednesday morning to discuss progress and any problems, which were being experienced. Related specifically to construction and quality issues.
- A monthly package review also took place between Bovis QS and package managers to address any cost and programme issues that arose and to ensure everything is on target.

The above process illustrates the management of the construction activities of a sub-contractor work package on such a major management-contracting project. Relations at Trafford were at times fraught but the underlying relationship was good and this enabled people to be very open and direct in dealing with any problems that arose. This relationship was built up over a period of time and it helped that individuals had worked together before at Meadowhall, where a similar construction method was employed. This experience was important and helped the sub-contractor to develop his own understanding of the performance levels that Bovis expected. On their part the essence of Bovis Management is that their sub-contractors are treated professionally and fairly. At the beginning of the project mutual interest was established between Bovis and SCC in the sense that it was perceived by both to be good to be involved in this project, this provided the framework in which decisions were made. Also, as mentioned above due to the regular design co-ordination meetings that were held (40-50 though out the duration of the project), key participants got to know each other very well. These meeting helped production but also helped in developing the relationship and understanding between companies, enabling differing perspectives to be presented very clearly. In these meeting relevant information could be identified and decisions made in interest of the project, which ultimately benefited the stakeholders.

The car park package is a prime example of the application of pre-cast concrete in both a structural and aesthetic situation. It has enabled SCC as a company to develop its ability to design and manufacture products to consistently high standards of finish and quality, as well as demonstrating the ability and limits of pre-cast concrete to be used in conjunction with other building materials and construction methods, such as in-situ concrete and steel. This solution met the clients briefing requirements and presented the best value for money. Also this process was effectively managed by Bovis Construction. Although partnering was not explicitly used as the term to describe the approach being used on this project, the concept of meeting objectives with in a team certainly existed on this work package and is thus a good demonstration of how management contractors may partner with sub-contractors.

5.3.2.10 Performance Review Process

As described earlier within the work packages under Bovis QMS there is the opportunity for an ongoing review of all aspects of individual work packages. The basic managerial concept presented by Bovis personnel was a very simple 'plan-do-review' process. Within this framework review played a major role and was both ongoing whilst the works were in progress and at completion of particular work packages. Review meetings covered the functional areas of cost, planning and quality. Early involvement of sub-contractors in the process helped to add elements of buildability into the final design.

Performance measurement and management is critical to building relationships as there is a need to fully understand and appreciate that targets are being met and people are achieving individual and mutual objectives. If performance standards are established and maintained then

this makes the relationship between organisations better. Essential tools in ensuring construction progresses effectively are a programme, a specification, risk and cost updates and regular performance measurement or review. Also, the establishment of milestones with ongoing planning and re-planning for each of the 70 work packages, which is the responsibility of the engineer in charge, is a critical aspect of ensuring that the project is constructed on time. Quality issues and cost issues in this case were also addressed in weekly or fortnightly meetings and at these meetings any problems that arise are dealt with. Usually these meetings include Bovis representatives (engineers / QS / design) and appropriate sub-contractor representatives. Progress is typically measured as a percentage of total work and this helps to determine valuations and payments. Bovis monitor very closely these key indicators against work package programmes and cost estimates to ensure that the project remains on target and whether any remedial action needs to be taken. The importance of the skill and expertise of the Bovis construction managers was identified. One example stated was the need for 'having a feel for what is happening on site, intuition which comes through experience of having done this type of work before' (10).

5.3.2.11 Summary

At Trafford the 'partnering', which took place, is best summed up as being a state of mind or 'culture', which existed between project participants. The basis of this 'culture' was (a) project focus; (b) an effective, inclusive information and communication system; (c) co-operation and a non-adversarial approach; and (d) the use of standardised products encouraged on the project.

(a) Project Focus

The basis of this was 'client focus' from the construction team, this helped to set objectives and to satisfy the requirements of the client. Working with a knowledgeable client who understood the construction management process definitely facilitated the achieving of these objectives at Trafford.

(b) Developing an effective information and communication system

Establishing integration of information and communication systems at an early stage in a project, results in the development of integrated project teams and an integrated delivery process based upon developing skills, measuring performance, continuity of delivery and an overall philosophy of continuous improvement. A critical aspect in this case was role of Bovis in bringing together the client, design teams and various package contractors. Effective and timely communications were facilitated by an on-site design team office complex where all parties were represented which permitted easy transfer of information.

(c) Encouraging co-operation and a non-adversarial approach

A good strategic level relationship developed at an early stage in the delivery process had an impact upon the managerial and operational levels with the focus upon achieving the 'vision' presented by the client. The good relationship at the top enabled various relationships within the project structure below this to be managed more pro-actively.

(d) Using standardised products where possible

The use of standardisation in the design and construction process and collaboration with suppliers where possible was encouraged on the project as a way to reduce cost, improve timeliness and quality ensuring

the client received what he wanted. There are number of clear examples where the relationship between Bovis and their sub-contractors enabled the design to be standardised and for pre-fabrication to occur.

5.3.3 Conclusion

From this case study it can be identified that the essence of partnering on the Trafford Centre project is not adequately described in words such as 'consensus' and 'tolerance'. These are important and necessary, but the proper description resides in the adoption throughout the team of what could be described as an 'even-handed' view. Achieving this position requires 'balance', 'equity' and 'fairness' between players. This describes the 'state of mind' required for successful partnering. The aim is to make the best of project stakeholders respective talents and expertise and not to become embroiled in conflict based upon institutional precedents and barriers that feed a lack of understanding of other parties and ultimately leads to disputes. From the very beginning of the project the client sought to develop an atmosphere on the site, which was conducive to organisations, being open and honest with each other. This was achieved by being straightforward and taking timely decisions. By establishing this attitude amongst members of the design and construction team and by seeking the inclusion of individuals and organisations the construction process would be facilitated. The client felt that this would impact positively upon the value for money that he receives from the completed project.

The Trafford Centre project is an excellent illustration of the Bovis policy of 'client focus'; understanding what the client wants, providing the necessary expertise, working as a team with other professionals to ensure that the clients requirements are met. The emphasis was upon understanding and communicating the client's needs. A critical aspect of

the Trafford Centre was the extent and degree that the construction team went to understand the client's requirements. This was at first brought together at a strategic level in the organisation and then the vision or dream was passed down throughout the management team to the operational level of the project. Good strategic level relationships were developed at an early stage in the delivery process and had a positive impact upon the managerial and operational levels with the focus upon achieving the 'vision' presented by the client. The combination of all the above factors resulted in integrated project teams and an integrated delivery process based upon developing skills, measuring performance, continuity of delivery and an overall philosophy of continuous improvement. A critical aspect of this is the role of Bovis in bringing together the client, design teams and various package contractors. The development of integrated project delivery teams permits the development and improvement of skills. The construction manager placed emphasis upon measuring performance and ensuring pre-agreed targets were continually reviewed, amended and met.

So, whilst not presenting what may be considered a contemporary view of partnering The Trafford Centre illustrates a way of working which many in the industry feel represents how work used to be conducted in the 'good old days'. A time when there was no need to invent the term 'partnering' as this was the way that all business was conducted. If this is indeed the case and participants from Trafford are representative of the industry and can see the benefits of working in this way then this does offer hope for the future well being, prosperity and development of the industry. However it is worth noting that although the Partnering approach adopted here has been described by the team as more of a soft, cultural approach to Partnering based more on the development of personal relationships than scientific method, it has been supported by many rigorous management principles such as the Bovis Effectiveness

Initiative and QMS. Many of these principles such as continuous improvement, and performance measurement have been identified as core components of more formal and rigorous approaches to partnering.⁵⁹

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⁵⁹ As described in the Literature review and mini cases.

5.3.4 Summary of Partnering & Recommended Key Principles

5.3	Effective (Aspects of Partnering which were effectively implemented)
1	Partnering embraced by senior management (5.3.2.1)
2	Integrated design team under same roof
3	Close collaboration with key suppliers
4	Clear sub-contractor selection process (Fig 21)
5	Standardisation and prefabrication
6	Good communication between strategic and client management levels
7	A cohesive and trusting project team
8	Open information sharing and a non-adversarial project culture
9	Rigorous performance monitoring/ measurement system (5.3.2.9)
10	Direct negotiation between Peel and Bovis to arrive at bespoke contract (5.3.2)
11	Bovis specialised in building type (5.3.2.1)
12	Experienced labour utilised (5.3.2.3)
13	Project is client driven with experienced in house staff (5.3.2.1)
14	Clear client vision (5.3.2.2)
15	Project team clear on central on central design philosophy (5.3.2.3)
16	End users included in decision making
17	Clear demarcation of work packages
18	Integration of design and construction disciplines (5.3.2.4)
19	Use of Bovis Self Development Programme (5.3.2.4)
20	No blame approach fostered y client (5.3.2.5)
21	Co-ordinated CAD utilised (5.3.2.6)
22	Bovis endeavoured to treat SC's professionally and fairly (5.3.2.6)
23	Regular coordination meetings
24	Plan-do-review ethic (5.3.2.10)

25	Openness and honesty approach filtered down through the project (5.3.3)
26	Integrated project delivery teams established (5.3.3)
27	Specific trips to assess suppliers (5.3.2)

Caution points identified include:

<i>Caution Points (ineffective aspects)</i>	
1	Not a contemporary view of partnering
2	Informal arrangement (a mindset/culture not processes) (5.3.2.1)
3	No formal partnering workshops
4	No front end partnering strategy provided
5	Difficult for people to grasp overall partnering concept
6	Incentives for good SC performance could be better

The Bovis team were confident that their in house procedures such as the Bovis QMS, supplier selection and performance monitoring techniques covered many of the key principles required of partnering. However they agreed that the principles needed to be ‘distilled into a partnering policy. Partnering could then be more rigorously implemented and better communicated as shown in Table 16.

Key Recommendations (By Team For Better Future Partnering Performance)	
1	Use of a Bovis partnering Policy Document that encapsulates all the relevant management principles
2	Ensure team understand the bigger picture (communicate partnering strategy)
3	Greater incentives to produce a true ‘Win-Win’ scenario.
4	A more integrated IT system
5	Initiate more of a long term partnering relationship with Sub-contractors
6	Maintain successful aspects described in 5.3.4
7	Ensure strategy is effectively communicated to the team

Table 16: Key recommendations for improved partnering

5.3.5 Interviews

Interviews conducted in the preparation of this case study document

1. Neil Elwell, Project Architect, Leach Rhodes Walker, 17/4/97
- Martin Bentley, Programme Co-ordinator, 9/1/9
2. Fraser Scott, Design Manager, 9/1/98
3. Martin Gregory, The Trafford Centre Project Manager, Bovis Construction, 18/12/95
4. David Glover on Site, 9/1/97
5. Martin Bentley, Programme Co-ordinator; Fraser Scott, Design Manager 9/1/97
6. Ian Povall, Bingham Cotterell Structural Engineers, 17/4/97
7. Brian Garvey 5/11/96
8. Liam Hayes, 23/5/97
9. Martin Bentley, Fraser Scott, Liam Hayes, Brian Garvey, 21/2/97
10. Martin Gregory, David Glover 12/3/96 on site at Trafford.
11. Brian Garvey, Construction Executive; Stephen Crummey, Fraser Scott, Stuart Savage 16/7/96
12. Dennis Bate 24/9/96
13. Brian Garvey, 9/1/97
14. Liam Hayes, Project Manager Car Park Package, 9/1/97
15. Liam Hayes, General Discussion 24/1/97
16. Alan Hook, Project Surveyor 24/1/97
17. Liam Hayes with Tim Chisholm, (video producer), 7/3/97
18. SCC Factory Visit – Prefabricated Components
19. Observation of SCC Design Co-ordination meeting, 5/6/97

5.4 Case 3: Marks & Spencer, Bolton

This case study is based on a single construction project selected from a series of projects that together form the long-term relationship that is in existence between Marks and Spencer and Bovis construction. Obviously the nature of construction means that a large number of organisations are involved in any one project, and the contribution of these organisations is acknowledged, however, it would not be possible to document in detail every contribution and relationship throughout the project. Essentially this case study considers the relationship that existed between the client and the management contractor, although other organisations from the design team and sub-contractors are mentioned when appropriate.

The case study is presented in three sections. The first section sets the scene. The participants in the case study are briefly described, complete with a brief history and description of the long-term relationship and the background to the particular project to give the reader some contextual understanding. The 'story' of a specific project (M&S Bolton) is provided in the second section concentrating upon key activities at pre-construction, construction and post-construction phases that can be perceived as best practice in achieving a successful project outcome. The final section identifies lessons for future practice and opportunities for continuous improvement identified from this case and from more general experience of participants. A summary is provided drawing together some preliminary conclusions.

Bovis and Marks and Spencer provide the industry with a mature example of organisations working together, (75 years in fact) in what might be considered as a landmark example of 'partnering' in construction. Nearly 2000 projects have been completed around the world, in the UK, continental Europe, the USA and the Far East. The

nature of this relationship has been subject to change over the years due to the presence and departure of particular key individuals and in response to market forces. A flexible approach to what is required in the market at a particular time can be said to personify the nature of the relationship. This flexibility and willingness to change must be considered as an important factor when trying to identify why the relationship has endured.

5.4.1 Conducting the Case Study

It is difficult to capture the complexity of a long-term relationship based upon a single project but this case study will seek to illustrate how previous knowledge, goodwill, trust and mutual respect help facilitate the satisfactory completion of difficult construction projects for all parties. The study provides a combination of an historical analysis and an illustration of the maintenance, development and management of the relationship on a 'project specific' basis, in this instance M&S Bolton. This is followed by an attempt to identify good practice in dealing with project 'problems' and to establish the importance of good relationships between team members.

Initial discussions with both the client and contractor Project Managers identified a number of key areas of concern for the project stakeholders that need to be considered throughout the construction process on any project. The emphasis of the investigation was upon relationships and dealing with problems that arose. The key areas of concern, which were identified, were as follows (and are explained in the case study):-

- *Design* - in particular the completeness of design at tender stage and the issuing of variations, the relationship between design team and contractor, specific problems of 'cut and carve' projects

- *Quality* - right first time mentality and defect free construction, attitudes to snagging
- *Programme* - problems with 'cut and carve' and the extent of early liaison with store manager concerning programme
- *Cost* - how does a lump sum, fixed price contract affect the relationship between parties?
- *Safety* - responsibilities of construction team members
- *Communications / Store Issues* - interactions between key people and processes in the production of new facility, interface problems between retail and construction, the need to keep the store operational and client happy

Focusing upon these issues allowed the different perspectives of stakeholders to be contrasted and to identify how these are dealt with in practice. Wherever possible triangulation of data from the three key sources, namely client, contractor and design team in relation to the key issues is undertaken to strengthen the case study findings

5.4.2 Relationship Background

This section of the report provides a background to the organisations involved in the long-term relationship, details of the history of the relationship and an outline of the specific project that was investigated.

5.4.2.1 The Organisations

5.4.2.1.1 Bovis (see Northern Foods case, Section 5.2 for general background)

5.4.2.1.2 Marks & Spencer Plc

Marks and Spencer plc have until recent problems been regularly identified as one of Britain's most successful and efficiently managed

companies in the business press. The Marks & Spencer open secrets of success have seen a focus on quality, value for money and emphasised the importance of human relations (TSE, 1985). An early 90's Marks and Spencer's Mission Statement illustrates the values of the organisation:

'Our aim is to create an international retailing business, meeting local needs but integrated in such a way as to allow expertise and experience to be shared throughout the Group. We are building on the traditional strengths of Marks and Spencer: a reputation for high quality and good value, a first class procurement base, an excellent team of people and highly professional management.' [Annual report and financial statements (1990)]

Data collected for Building Magazine has regularly seen Marks and Spencer in the Top 10 clients in terms of total value of work placed. As a major retail organisation with an emphasis upon quality there is a need for their in-store environment and general ambience to reflect this. This requires a particular atmosphere within which must be replicated around the country. Marks & Spencer are an important and extremely demanding and challenging client for the industry. They are a client with high expectations and stringent contractual terms and are at the forefront of client-led improvement initiatives which helps to set new standards for the industry. A demanding customer traditionally drives the process of innovation in retailing and manufacturing; this is increasingly becoming the case in construction.

5.4.2.2 The Long Term Relationship

Bovis and Marks & Spencer have been working together for over 75 years. Over this period of time the specifics of contract types and project

management has been subject to change but the nature of the relationship in essence has been collaborative and based upon a belief in a 'partnering' attitude and philosophy. A high level of mutual trust and understanding between each organisation has developed in these 75 years, which has created synergy and mutual benefits. The development of the relationship is illustrated chronologically in Table 17 identifying the development of the relationship in terms of the scope of Bovis' responsibilities, the form of contract and nature of the relationship. The table also identifies key changes:

Chronology (Approx.)	Scope of Bovis Responsibilities	Form of Contract	Nature of Relationship	Identified Changes & Why?
60 years ago	Building Works	M&S/Bovis Building Works	Partnership	Development of Fee system to raise standards of projects
20 years ago	Building Works and Hard Finishes	Fee	Partnership	Continue improvements with repeat projects
10 years ago	Building / Finishes/ Equipment	Management and Design Manage Construct (DMC)	Partnership	Co-ordinated fit out
5 years ago	Design and Full Fit out	Two Stage D&B and management	Partnership	Guaranteed Maximum Price for cost savings
Current Situation	Turn Key	M&S Single Stage Lump Sum	Partnership	Full Risk and Fixed Price with client seeking certainty with respect to cost, time and quality

Table 17: The development of the relationship in terms of the scope of Bovis' responsibilities

5.4.2.3 Historical Background

Bovis used to do the majority of Marks and Spencer construction work as management contractor with little risk to Bovis due to the management fee system and cost-reimbursable contracts. During this period Bovis effectively became 'the building arm of M&S'. For a long time as part of the Bovis Construction organisational structure a separate Marks and Spencer Division existed. This indicated the level of work that Bovis were undertaking for Marks and Spencer. As Marks and Spencer were such an important client it is perhaps clear why there was such importance attached to continuity of personnel and the need to understand the 'system'. This could be done more easily if people could identify specifically with a particular division and particular types of projects.

In recent years Marks and Spencer have taken two key decisions that affected this 'historical situation'. About 10 years ago Marks and Spencer made the decision to widen the supplier base. This meant sourcing additional but limited construction companies. In order to do this Marks and Spencer use a professional and structured approach to managing sourcing and procurement. This process involves assessing potential contractors on a number of criteria (competitiveness, suitability, experience, financial strength, quality standard, health and safety policy, workforce and employee management, workforce skills and qualifications). This provides an element of competition and a benchmark for relative value for money. With this also came the use of two stage and single stage 'lump-sum' fixed price contracts as opposed to 'management fee' contracts. A further development here saw the lump sum tendering process that used to be carried out as a two-stage process (project tendered though not fully designed) become a single stage process (building tendered fully designed).

The business philosophy of quality, customer service, profit and growth remains the same although changes have been experienced over the duration of the relationship and how this is achieved is different. The culture of business differs today yet the relationship remains and is highly valued by both sides.

5.4.2.4 Current Situation

Following a change of personnel in their Estates department it is evident that Marks and Spencer have adopted a more commercial approach to procuring their construction works. Marks and Spencer now operate with a number of pre-qualified contractors. It may be that some form of job allocation is in existence but the fact remains that Bovis now work with Marks and Spencer in a competitive environment. Now Bovis are treated like other major suppliers to the Marks and Spencer organisation. Operating in an increasingly commercial environment these actions were heavily influenced by 'the market'.

Marks & Spencer are an experienced and professional client and they are aware of the risks involved in construction. They see partnering as an opportunity to focus upon core skills. As a retail organisation Marks & Spencer do not want, or see it as necessary, to develop skills in construction, other than being a professional client. To be a professional client they must identify their requirements and communicate them effectively. In order to develop an effective, well managed approach to individual building / project procurement Marks and Spencer have a multi-functional in-house team, who in conjunction with outsourced 'preferred' consultants, develop the project brief. Marks and Spencer believe in disciplined in-house project management of the design, the construction brief, specification and procurement. Specifics of project procurement differ according to job in question and they are comfortable using a range of procurement routes depending upon what is deemed

appropriate for each job. Procurement options from practice include a commitment to (a) management contracting; (b) lump sum fixed price contracts (both single stage and two stage), and, (c) negotiated contracts.

Marks and Spencer still believe a firm and clear contract with all risks and responsibilities specified is required as part of the procurement process. This flexible approach to procurement is a benefit of developed relationships between organisations and is essential in a business environment that increasingly demands adaptability and tailored solutions. The Bovis approach also changed and now it is unlikely that employees work solely on Marks and Spencer projects, rather they alternate between clients if possible to maintain 'freshness' and to enhance potential learning opportunities. Marks and Spencer still value employees with experience and developing this is a vital part of employees learning and education programme. Bovis are committed to becoming a global player and require global customers and hence Marks and Spencer remains an important client and 'business' centre.

5.4.2.5 Project Background

Marks and Spencer Bolton comprised a multi-storey extension and total refurbishment to an existing large town centre store. Retail space in Bolton increased from 48000 to 68000 square feet by adding two new levels to the Deansgate store and following the closure of a 'satellite' store in the town. As is usual on these types of developments, it was essential that the store remained operational throughout the construction process with minimum loss of trade and disruption. The project entailed the addition of two extra floors and refurbishment of the existing floor space. The contract value was approximately £9.1 million and the contract period was 12 months, October 1995 – October 1996. The contract form used was the Marks and Spencer Design and Construct single stage lump sum.

This was a fairly complex project that had with access restrictions due to the stores town centre location. Table 18, below illustrates details of the development from the stores perspective and identifies the final layout. The layout at project start was the traditional multi-floor layout with Menswear and Homeware at the top level.

Location within store	Pre-Development	Post-Development
Ground Floor	60% Food Hall, 40% Textiles	Dedicated Food Hall Relocation of: - • Ambient section from front to back of store • Cold chain to main body of store • Installation of new produce shop, butchers shop, sandwich shop
1st Floor	Ladies clothing, Ladies accessories, Lingerie	Ladies clothing
2nd Floor	Staff Quarters, Offices, Warehouse	Menswear, Ladies accessories
3rd Floor	Roof level	Lingerie, Children's wear, Homeware
4th Floor		Staff Quarters, Offices, Warehouse

Table 18: Details of the development from the stores perspective

The store opened on time and has been trading successfully since. The development coincided with the 'Manchester Bomb' and the closure of the Manchester store had a positive impact upon trading in Bolton with customers travelling from the usual Manchester 'catchment' areas for their Marks and Spencer products.

5.4.3 Story of the Project

'In construction there is a need to work together, to fulfil mutual objectives and to maximise profit. This represents a complex balancing act for the construction team.' (1)

5.4.3.1 Pre-Construction Phase

Clarifying Project Objectives – preparing for the development

After initial feasibility studies had been undertaken on a number of conceptual schemes, dating back to 1993, the development at Bolton received board approval. This initiated a series of brainstorming and team building events 'in-house' amongst Marks and Spencer senior management (store manager, deputy manager, finance manager and personnel manager). The aim of these events was to develop a strategy to cope with the imminent building works and to minimise their impact. A 'Supervision and Focus Group' were formed and given the opportunity to put forward their comments and to pre-empt possible problems with the plans e.g. no sluice room was planned for the Food Hall, it was expected that staff would go to the 4th floor stockroom level. As lift access is key to stock movement in Bolton this would have meant carrying water up staircases! Also, with customer care in mind the Focus Group wanted to retain a public staircase (usually these are taken away with developments). The Project Team accepted this idea and this illustrates how it is important to let the staff, as end users, challenge the development plans early enough so that their knowledge and understanding of the building can be utilised.

Having received the necessary approval from the Marks and Spencer Cost Evaluation Committee the design of the Bolton store was signed off very early as complete (Summer 1995). As the project developed the nature of the existing building became apparent and layout requirements

changed, as often happens in the dynamic retail industry. With existing stores pre-tender exploration presents a problem due to the disruption it causes to the businesses. However expenditure on exploration at this stage can prevent expensive discoveries being found at a later date. Historically in construction, 'as built' and 'record' drawings have not been as accurate as they could have been. This is an area that could be improved and computer technology may provide a possible solution.

5.4.3.1.1 The Tendering Process

Following approval of the detailed design by the relevant board, Marks and Spencer Bolton was tendered in open competition with a total of 4 construction companies bidding. The tender process was single stage lump sum and commenced in early July 1995. The tender period was initially 8 weeks though this was extended due to additions to the package. The M&S view was that this was a fully designed job although there were clearly elements where 'risk' was present due in part to the extent of pre-construction site exploration, which is permitted in an operational store.

Bovis split the job into various work packages and at this early stage in a project it is usual for as much of the eventual team to be in place and working on the job. If possible this team includes Project Manager, Construction Manager, Commercial Manager, Services Manager and a Design Manager. The detail of who is actually involved depends upon the nature and requirements of the job. Work packages would be split up and the design manager would assess the completeness of the design. The eventual Project Architect inherited this design, which had been signed off as complete by Marks and Spencer in the summer of 1995. To produce a smooth running and successful project it helps to have a common link through the job from pre-tender to completion, 'it pays to have a core

team' (TA) with the Commercial Manager identified as critical for financial management purposes.

As well as identifying the internal team, a Bovis delegation also went to visit the M&S store team to initiate the relationship between these parties and begin to understand the complexity and necessary logistics of the project. This activity, building the relationship with the Marks and Spencer store team was something neglected by other tendering organisations. The tender was submitted in late September 1995 and was evaluated by MDA (QS) and the Design Team.

5.4.3.1.2 Tender Evaluation

When evaluating a tender Marks & Spencer consider a number of factors such as:

- The people who form the contractor's 'team'
- The usual triumvirate of Cost, Programme and Quality
- Project complexity and the contractors understanding of this and their proposed Construction Method (especially on complex cut and carve job). The contractor's attitude to safety and care and concern for the public. Their attitude towards snagging and defect free construction is also important
- Recent performance and how many Marks and Spencer Projects the contractor is currently working on

A post-tender evaluation meeting took the form of an interview between key people with a number of contracting organisations still involved. For Bovis the Construction Executive (Colin Small), the Project Manager, Services Manager and Commercial Manager attended. This is usual for this type of job. Such a meeting would usually provide a brief introduction to the company, and the proposed team indicating previous

experience. It would also provide an outline of the proposed programme and construction method by the Project Manager followed by an illustration of maintenance and installation of store services by the Services Manager. This is usually followed by a question and answer session relating to 'key areas' of concern.

The decision as to who has won the job is usually provided within a few days. Bovis were not the cheapest on the list but won the job due to perceived 'added value'. Bovis were awarded the job in September 1995. The approved design was novated to Bovis Construction with all the responsibility on the contractor to produce the design provided. The design team maintained a duty of care to the client in respect of the design but at this point there is a significant change in the contractual relations between client and design team and design team and contractor.

5.4.3.1.3 Team Selection

The aim for M&S Bolton, indeed all M&S jobs is a 'defects free' job. A worthy aim as this provides a better outcome for all parties (Construction Team including Management Contractor and Sub-contractors, Design Team, Marks and Spencer and their customers), as there is no need to go back and carry out repeat work. The reality is that this is a difficult goal to achieve. Bovis are managing a process and their job is to manage, control and motivate a large number of different people and organisations. Who they choose to be part of this team represents some very important decisions to be made. Teamwork and co-operation is required at a number of levels within any relationship, strategic level, management level, operational and site level. When putting together any construction team there is usually a high level of opportunities for selection at the management and operational levels. People and organisations are selected who 'appear' comfortable with each other and would be able to work together.

Sub-contractors with proven records of working successfully in the past for Bovis or Marks and Spencer were selected. Specific sub-contractor selection criteria, which included levels of skill and expertise, 'tried and tested', based upon past performance in terms of cost, quality, safety and meeting programme requirements. Bovis maintain an electronic database containing information regarding subcontractors' performance on previous Bovis projects. This resource is supported by personal knowledge of subcontractor organisations that naturally exists within the management staff. Recommendations and references can also be passed on by word of mouth within the organisation if particular individuals have not worked with specific subcontractor organisations. At Bolton there were approximately 35 work packages let. About a quarter of these were considered as 'key' players by the Bovis Construction Manager. These critical packages included general builder, mechanical and electrical, sprinkler installation, refrigeration, ceiling fixers, shop - fitting, steelwork and the roofing package. In order to manage certain aspects of quality and reliability on some dimensions of the project, Marks and Spencer will in some instances nominate preferred sub contractors.

It was stated (2) that a key requirement of a sub-contracting organisation is that they have a good site / project based manager. It is good practice to interview this person prior to any engagement to acquire a 'feel' of their knowledge, understanding and personality. Making the 'correct' choice here is important. It is these people who Bovis will be working with and communicating with, an important question to ask is, 'can you work with these people?'

5.4.3.2 Construction Phase

5.4.3.2.1 Managing Client Expectations

Once the contractor is in place, Marks and Spencer consider the most important aspect of the project to be the 'mission statement'. They believe that it is here that the argument must take place in order to get a thorough understanding of the each other's needs, and agreement on the process and demands of the project. Effort at this earliest stage is important to avoid problems later in the project. Further, M&S are what can be termed a 'professional' client due to the amount of work they undertake and expect high levels of health, safety and hygiene to fit their corporate image. This provides a particular challenge for the contractor on Marks and Spencer projects in terms of the construction solution and method. In operational stores their emphasis is upon safety, cleanliness, general appearance, signage and noise levels.

For Marks and Spencer, and any other retailer, the year is characterised by a series of key events, which provide good sales opportunities, Christmas, January Sales, Valentine's Day, Easter, Mothers Day, Fathers Day, the Back to School period. In a 12-month contract it is inevitable that works and key dates will clash and this presents specific planning and programming objectives, which it is necessary to work around. It is likely to be in the contractors brief to avoid major disruption around these periods of time. Both store and contractor must agree what this means in practical terms e.g. Bovis 'avoided' the Mothers Day peak by originally planning major activity the weekend before Mothers Day. In practice this was changed to the Mothers day weekend itself i.e. sales had been maximised and the store carried less stock, which needed to be moved.

Also, during construction a key concern for Marks and Spencer is for the separation of construction activities from the rest of the store and for the safety of customers and staff. Obviously the client wants the building to

look like a store rather than a building site and the contractor must be aware of this and operate accordingly. In an operational store security is a key issue for the client and with 24 hour working this required the contractor to have a robust and rigorous security system in place.

5.4.3.2.2 Project Complexity

Logistically Marks and Spencer Bolton provided a challenging and complex project for the following reasons:

- Access very difficult
- Number of work faces operational at any one time
- Unforeseen programming and planning

This complexity again emphasises the importance of communication links with the store and the need to keep them informed about what is happening. Sally Martin, store liaison, was the key link with weekly formal meetings with key members of the M&S store team, allied to frequent interactions on a daily basis relating to construction activities and progress. Sally's role at Bolton which was initially split between commercial management and dealing with Bovis, developed into a full-time liaison role between Bovis management, the construction team, the store team and customers. Her main concern to keep both staff and customers informed and happy in relation to the disruption and upheaval associated with a major construction project and to minimise the impact of the development on the commercial operation. The issues of concern and potential problems the M&S store team face are obviously different to those of the construction team. This illustrates the potential problem of differing perspectives on a construction project and the need for excellent communications.

5.4.3.2.3 Team Building

Team building is valued as a very necessary activity in developing relationships between the company and contractor. This takes place in workshops, seminars and site visits. Particular emphasis is given to developing the team of site manager, project manager and store manager. For the construction team informal team building exercises such as ten-pin bowling and social evenings are an essential part of the construction process.

It is essential to foster a sense of 'team' togetherness amongst store staff as well as the 'construction team'. This helps to maintain the morale of staff during periods of construction that were stressful and frustrating. At Bolton, the works seemed to continually impact upon the same people and it was necessary to take special attention of these staff. Once Lingerie had moved to the satellite in February the burden repeatedly fell on the Ladies Wear and Food teams in the main store. The continual process of de-merchandising and then re-merchandising created tensions and frustrations for particular staff members who were regularly affected by the development. Of approximately 200 staff, half were seriously affected particularly wines and foods due to the need to move full racks of wine and the settlement of dust on the bottles.

5.4.3.2.4 Communications

Successful construction relies upon effective and reliable communications. Information exchange and keeping people informed were identified as key activities. For example, Sally Martin's liaison role with Bovis fed into a liaison with Marks and Spencer store staff. The aim here was to communicate, to provide a physical presence, to be visual and to affect a trickle down of information from the focus team in a manner that was described as 'fun but informative'. There was also a need to follow up and review activities in a continuous evaluation process. This

liaison enabled a 'development update' newsletter to be produced that aimed to inform staff of progress to date and future construction activities at the various work faces in the store. The responsibility for Bovis is to manage store expectations so the client and his store team know what activities are taking place and where. This is essential public relations that the contractor must be prepared to undertake. Also, in conjunction with Ted Brown, from Advertising at Baker Street, Sally developed 'tin-tin' men that decorated the screening to provide more pleasant environment and also informed customers about the construction works that were underway.

Sally Martin's role and responsibility was also communicating to divisional team, providing a progress report and an assessment of the impact of the development on the sales performance of the store in relation to business sales performance, particularly during periods of major building activity. During construction, weekly team meetings took place to manage the next phase of the development with the Management and Supervision levels, as well as monthly focus team meetings to update the general staff. The weekly meetings were concerned with the immediate short term, the next phase, the bigger phase and floor-by-floor issues. Focus team representatives were also given the chance to walk the backstage areas to see the work in progress. 'Seeing is believing' and they are better equipped to communicate to their colleagues.

5.4.3.2.5 Management of Construction Progress

Once a project is underway Marks and Spencer feel that the onus is on the contractor and consultant to manage the sub-contractors and suppliers and the risks involved. To support this Bovis operate weekly formal sub-contractors meetings for all packages once they are operational. Other regular meetings to monitor and review progress include Design Team Meetings, Services Design Team Meetings, Policy Meetings, Foreman's

Meetings to monitor production, and Safety Meetings. These meetings involve relevant people from the project whatever stage it is at and are relatively structured. Unstructured Team Meetings are also held on a regular basis to develop team spirit.

Enabling works started in early December although the bulk of the job did not start in earnest until January after the Christmas and New Year peaks. The tower crane went up in January and this was considered symbolic of the project starting. Serious weather problems were experienced in January, February, and March that affected works. The time of the year obviously needs to be considered when programming particular activities. At Bolton, major work was being conducted on the roof in January and February. This is not a good time to be working there for a town at the foot of the Pennines. Throughout construction a number of 'critical moments' occurred. The worst 'pinch' point to the store was when the screening to construct the scissor escalator was erected, two thirds of the way through the programme reducing original selling footage by nearly half and impacting upon visibility across the sales floor. Another area that created some tension was with the breaking out of the old escalators and staircases, an activity that created lots of dust. This pushed people to breaking point and a 'janitor' was provided by Bovis to deal with this problem.

Due to 24 hour working the project required the planning of two programmes (referred to as 200% planning) in an occupied and operational building. This meant that before each day shift there was a need to re-assess the previous nights activities and vice versa. Unforeseen nighttime or daytime activities could create problems and there was a need to continually re-assess and refine programmes. In conjunction with this daily programming there was also a need to continually monitor and refine medium and long-term programmes as construction progressed.

The programme was also very tight with little 'float' where strategic operations such as refrigeration installation, lift installation and escalator installation are critical to maintain the smooth operation of the store. The fact that virtually all weekends were worked emphasises this issue (originally only an approximate 40-60% were anticipated as being required). The original programme slipped for a variety of reasons including the number of work faces, adverse weather conditions and communications from Bovis head office. Considering these complications the construction team did extremely well to hand over only one week later than the original completion date. As the project progressed there was a need to 're-phase' the programme to ensure target dates were met. Bovis were successful in providing Marks and Spencer with the benefits of additional and refurbished floor space on specific agreed dates as the project progressed.

5.4.3.2.6 Project Completion

To celebrate achievements the store team had a number of free social events during the building process for example, strawberries and cream during Wimbledon fortnight and free Breakfast and Bucks Fizz to mark new staff quarters hand over. Other achievements such as when screens came down and the launch of the first central escalator operation were celebrated amongst the Marks and Spencer staff. This was seen to be important in dealing with the disruption and developing the sense of progress and milestones being met. The store was completed and became fully operational in the first week of November 1996. As the construction works were completed on a phased basis this provided an opportunity for two opening ceremonies and two shots at publicity. Celebrating achievements was a key aspect in rewarding and motivating staff, one example was the bucks fizz breakfast with top rated Michelin chef Paul Heathcote present at the opening of the food hall. The mayor of Bolton also performed the cutting of the ribbon. Nat Lofthouse opened the main

store and opening events included a prize draw to win a car, a jazz band, pianist on a grand piano, face painting, makeovers and other activities.

5.4.3.3 Post Construction Phase

When the project is complete it is usual for project 'post-mortems' to take place. These are useful in enabling people to reflect upon where things went well and where not so well and provide a formal learning opportunity. They also provide an opportunity to formally close the project and maintain relations between parties in the calm aftermath of a construction project that can see tempers frayed and relations soured. A review can take place at a number of levels in-house in construction and client organisations and inter-disciplinary.

5.4.3.3.1 Review of Construction Process

Marks and Spencer use a standard project appraisal questionnaire, which is filled in by the construction team for post completion evaluation. This post-contract review is undertaken following a structured agenda considering scope of works and to provide ratings for key parties (M&S / Consultants / Contractor / Sub-Contractors) and provides the client with a standardised form of data. Large projects may also involve a formal review involving key players in addition to the project appraisal questionnaire. For Marks and Spencer the number of variations issued and the number of snags provide a useful quantitative performance indicator for projects as they search for the snag free job.

Bovis policy on Marks and Spencer projects is for the Project Manager to provide a summary report on the project relating to specific project performance prior to their in-house review. This identifies areas to focus future improvement initiatives upon. Also, the degree of corporate thinking between Bovis and Marks & Spencer was embodied in a seminar held at Harrow fronted by Nick Penny, Marks & Spencer to review

various projects completed in 1996. This enabled a strategic overview of performance to be gained and consider other issues such as workload 'peaks and troughs' and programming and staff issues due to the potential overloads at Christmas and Easter for a major retail client.

5.4.3.3.2 Review of Finished Product

For the store, after construction work is complete there is still the task of making the extended and refurbished store work. This presents another learning curve the store team need to negotiate i.e. how customers move around the building, which sales floor level are they paying on, do they go to the top and work their way down paying as they go? These issues have an impact upon staffing levels and the service offered to the customer. These are issues which must be faced on each store and obviously a great deal of knowledge and experience resides in store management who have experienced a major development.

5.4.3.3.3 Construction Process Review: Key Issues from the Project

From the case study a number of key issues can be identified that impact upon performance.

5.4.3.4 Approach to dealing with Problems

Identified in interviews with Bovis and Marks and Spencer project managers at an early stage in the project, were key issues of concern, design and subsequent variations, quality, programme, cost, safety and communication. Different construction projects have different critical elements, however they always tend to focus on the three key elements of cost, time or quality. The Bolton project was completed successfully although there were a number of minor problems relating to design issues and some financial disagreements. At times friction existed between Design Team members due to inadequate initial surveys, building control issues and basic works co-ordination. A key aspect of this job that created

tension between parties was the project's 'complexity' and that the complex programming involved the need to manage construction and store operation. This was a situation with lots of 'work faces', which presented co-ordination difficulties for M&S store team, sub-contractors and the main contractor.

The interviews indicated that these problems could have been worse if the relationship between the parties had not been one of 'partnering' with such good communications. Problems such as those mentioned above tend to be industry wide but can be compounded by fixed price contracts that offer limited scope for resolving problems. Here, costs tend to be passed on and this can seriously affect programme. The working relationship between the design team and Bovis, at a project focused level, were very good throughout the project. A pro-active, conciliatory problem solving approach characterised the relationship between the design team and the contractor.

5.4.3.5 Procurement Route

Whilst it is understandable for a client to seek certainty in projects, a feeling exists that the lump sum, single stage form of contract is not conducive to 'partnering' and the 'non-adversarial' approach implicit with a partnering approach. If there are any changes the risk lies with either the contractor or the designer and this can lead to a combative situation. The client has combined fixed price contracting with an increasing reticence to make changes on projects. This has made life pretty difficult for the contractor. Historically, project variations have presented contractors with an opportunity to improve income and it is understandable for clients to want to prevent this.

5.4.3.6 Completeness of Design

The above policy does raise a serious question of whether a building can ever be fully designed prior to the start of construction, particularly cut and carve projects. At Bolton, the design was novated after it was signed off as complete and all the risk lay with Bovis. Design completeness is a recognised problem with 'cut and carve' town centre jobs where compatibility and co-ordination between the design and the physical building is critical to project success, when the initial design is assumed complete. At Bolton, the completeness of design at the tender stage was questioned and the possible need for a design audit at the tender stage was identified.

5.4.3.7 Improvement Suggestions

On reflection the team identified a number of areas they felt could be improved: -

5.4.3.7.1 Project Issues

Risk and risk assessment is critical for complex projects such as Marks and Spencer Bolton and there is a need to identify areas of potential problems. In the process there is a need to fully audit the design, the bill of quantities and to assess the tender market. When all three of these have been completed the price can be fixed and a contingency can be included for unseen risks. The more experienced the contractor the more accurately can this risk be assessed. Improving the efficiency of the process will reduce costs. With lump sum tendering it is important for the contractor to get involved as soon as possible to influence both design and buildability.

The construction team identified that maintaining the same team at submission, pre-construction and construction phases would have helped

by providing a common link. Bringing people on board as the project is developing can lead to ongoing 'learning curve' problems.

The lack of accurate recorded documentation needed to be addressed. If these do not exist on a project there is the need to conduct more extensive pre-development surveys that can help to reduce the risk profile on a project. This needs to be balanced with the disruption which survey can cause in an operational store. However this can be minimised if approached in a professional manner. Improving record documentation and as built drawings was seen as also necessary.

Other issues that were mentioned as areas which could be improved included the criticality of selecting the right sub-contractors, specification changes during construction, the importance of the post contract review and learning for future projects.

Job specific suggestions for improvement that may be relevant at other Marks and Spencer stores include:

- Totally removing asbestos ceiling tiles prior to starting main construction works
- Scaffolding the job in a traditional manner
- Delivery and storage
- Two stage tendering process would have helped to share the risk

All of the above had an impact upon cost but the learning provides opportunities for other projects.

5.4.3.7.2 *In-Store Issues*

Retail is a dynamic industry and on any project there are many unknowns (affect of Manchester bomb upon programme and opening dates, for

example). When stores are being re-developed teams must be prepared to change and flexibility is essential but this can be facilitated by effective communications. Unfortunately, a problem the store experienced was the feeling of being part of a complex three way relationship between Baker Street and the Contractor, where communication problems between these parties could make life very difficult in the store.

'The way particular events are dealt with, whilst not threatening the relationship produce friction and emphasises the difference in culture between client and contractor organisations and the need for effective communication to overcome this'. (3)

Also, as this was a fixed price contract it was very difficult to effect changes. This had an impact upon the relationship as the project progressed and things were costing more than had been anticipated. However through the focus and attitude of the team these problems were overcome.

5.4.3.8 Key Issues for the Store – Meeting Objectives and Maintaining the Ambience

As well as the need to meet the long-term objective for any development it is important for the contractor to maintain a pleasant store. During the redevelopment of an existing store what is important to the client is maintaining the quality environment and ambience, which is provided for the customers. The aim is to avoid extremes of heating and lighting and to maintain a high level of hygiene. Specifically, areas of concern which tend to occur at the interfaces of construction and retail are:

- Hoardings screening construction work require to be clean and to a high standard.
- Dust, which is produced during construction, can create a hygiene problem and merchandise must be protected. At Bolton double layers of polythene were used as protection.
- Lighting must be provided where screening affect the balance of natural and artificial lighting within the store. At Bolton neon strip lights were utilised down the sides of the hoardings.
- Security is essential on operational stores

Re-development invariably has a large impact upon a stores takings during construction works. The role of the store team is to minimise this disruption and losses and ensure quality and a smooth operation is maintained. The redevelopment of M&S Bolton resulted in estimated sales losses of £1.5 million.

Lessons learnt from store development include the importance of staff integration into the development process. This was described as ‘inform staff- involve staff- celebrate with staff’ to ensure high levels of customer satisfaction are maintained. Also, the timing of construction activities important to avoid key retail times.

5.4.3.8.1 Store Feedback (Improvement initiatives)

A ‘Development Pack’ would be useful in providing details of contact points, equipment requirements and specific issues for store. The store does not receive the specification and has to challenge omissions. Each store comes new to a development yet many areas must be consistent with previous developments. These points can be very varied, but because there are few checklists one can think of the question too late to action. Points Bolton challenged which were not covered by specifications ranged from:

- Sales floor fire bells located on the front face of columns. These faces are key merchandise and display opportunities. What was particularly frustrating was that 2 sales floors were fine and bells were on the column backs.
- No hand towel dispensers provided for sluice rooms.
- Electrical socket in ladies changing room located adjacent to only access door causing obstruction.
- Paper towel dispensers poorly positioned and could be hit by a door opening.
- No provision for sales floor customer seating.

When reviewing the early phases of the development plans, the ‘development’ pack could point the store to challenge the specification before it becomes a VORF (variation order form). Benefits could arise from developing ‘learning nets’ of store liaison staff that have experienced development projects. Also, embracing computer technology with such things as a virtual reality ‘walk through’ of the finished store would help with appreciating sight lines on each sales floor with respect to columns, tills and wardrobes.

5.4.4 Bovis & M&S Case Study Conclusions

Experience from M&S Bolton has led to subsequent jobs following a two stage tender process including provisional sums in the lump sum and for elements of negotiation in the process. Other procurement routes currently being pursued by Marks and Spencer include Management Contracting and negotiated two stage lump sum contracts. Lessons from M&S Bolton are already filtering into Marks and Spencer procurement policy with other projects being procured by different routes as mentioned above. The specific route depends upon a number of variables

including Marks and Spencer requirements, the nature and complexity of the project and the capability of the chosen contractor. Marks and Spencer now view Bovis as a supplier but it is worth considering how similar they are to other suppliers as the majority of the product that Bovis provide is not 'built in a factory under controlled conditions in a repetitious manner' (2). Also, Bovis provide a service, managing a process that is currently fragmented. Opportunities for greater levels of standardisation of both construction products and the process will be offered with new build and to a lesser extent with 'cut and carve' projects.

A trend in current Marks and Spencer operations and noted in other retail client organisations was their use of what could be termed 'general' managers as opposed to specifically 'construction' managers. For example, the project manager at Bolton had a background in catering and the Marks and Spencer Food Group. If adopted widely, this practice could help towards the transformation and development of the management process in construction. However, the construction industry is facing a skill-shortage amongst operatives. This can be related to the boom / bust nature of the industry and how it follows the economic cycle more directly than other industries and is most vulnerable to any recession and downturn in economic fortunes (4). Also training is the first budget, which is cut when firms are trying to cut costs and there is also a problem due to the lack of directly employed labour at work on construction sites. An example of this on M&S Bolton was with the ceiling fixers who had suffered in this respect and where the lack of skilled craftsmen impacted upon the cost and programme of the project, albeit the issue had been resolved before completion.

The key findings of the investigation into the Bovis / Marks and Spencer relationship, based primarily upon this detailed case-study of the M&S Bolton project, were as follows:

5.4.4.1 Project Specific Issues (as raised by the Bovis team)

- Long-term partnering allows added opportunities for organisational and project learning, which can influence strategy and policy.
- Benefits from continuity for members of the construction team are transferred to the client
- Marks and Spencer state preferences with respect to Bovis personnel seeking experience and understanding
- One of the key aspects of M&S / Bovis projects is the atmosphere of learning lessons and of continuous improvement which exists. This fosters the sense of team working and commitment to successful completion and to working together on future projects.
- All members of the construction team had worked together previously (as had many of the sub-contractors) this helped with the shared understanding of the quality that the client expected.
- Impressive track record of project participants from previous M&S projects
- It is important to develop an approach to dealing with problems in a conciliatory manner
- Consider the procurement route and the effect this may have upon relationships
- Consider the completeness of design when the project is tendered on a single stage tendered project
- The ultimate aim is to satisfy the clients objectives and at the same time maintain the store's pleasant ambience

5.4.4.2 General Issues (Project team)

- Essential to the success of partnering with repeat clients is the long - term relationship with key sub-contractors that has been established over many contracts. Repeat ordering means that their management, supervisors and operatives become fully familiar with client requirements and the management contractors own working practices.
- Responsiveness to the market and a flexible approach to working together help in the development of sustainable long - term relationships.
- Partnering is about developing long-term relationships and adding value to the clients business by understanding their business and meeting their building needs more effectively. By growing clients in this manner the contractors own business will develop and the perception of an industry beset by adversarialism will change as contractors, design teams and sub-contractors seek closer working relationships in a new working philosophy which partnering should embrace.
- Client focus and accurately identifying their needs is a measure of successful partnering. Satisfied clients lead to repeat work.
- Flexibility in approach is essential in diverse and rapidly changing construction markets
- Develop long-term relationships as this permits continuity of experience, of understanding and of client understanding. Ultimately this permits a higher quality service to be provided to the client.
- Select the right people with the relevant experience, understanding and / or an identified ability to learn what is required
- Construction is a 'team' business and this way of working needs to be encouraged. This should not be left to chance.
- Construction is a complex activity involving many players with multiple physical interfaces on site and even after the right people

have been selected a quality management system is required to ensure the construction process occurs efficiently, effectively and elegantly etc... (Bovis QMS)

- The review process is an essential part of learning and continuous improvement and this occurs throughout the project and ideally as a separate exercise after project completion to harness lessons most effectively
- Partnering is about changing mindsets, working together for mutual benefit and embracing the future positively

Understanding the basis for ‘partnering’ success is clearly difficult. Whilst it may be easy to attribute the success of the relationship to individuals, the development of shared understanding and developed personal networks is clearly one reason why the Marks & Spencer and Bovis ‘partnership’ has flourished for over 70 years and is considered a best practice example within the industry.

‘The relationship has changed and will change again in the future, but

Bovis must be flexible and adaptive to meet this change positively and

ensure that the client receives the service quality he expects...’ (5)

Personnel may change but the core values and attitudes of a company which are shaped by these people evolve, take longer to become established and make it possible for organisations to work together successfully. The nature of the relationship between Marks and Spencer and Bovis would seem to be based around long-term thinking and mutual growth with an emphasis upon problem resolution and dispute avoidance. Since the Latham Report (1994) references to partnering usually include the Bovis / Marks and Spencer relationship. Whilst this relationship is

different to many other examples of partnering it certainly illustrates the key benefits of customer focus; improved quality, cost effectiveness and speed; responsiveness; team spirit and innovation identified in 'Trusting the Team' (Latham, 1994). This has been achieved in a retail environment that is becoming increasingly competitive, and as mentioned at the beginning of this report a critical factor is the flexibility inherent in the relationship, which ensures the relationship endures despite external pressures for change.

5.4.4.3 Summary of Partnering between Bovis & M&S and Recommended Key Principles

5.4	Effective (Aspects of Partnering which were effectively implemented)
1	Project is part of a long term partnering strategy between M&S and Bovis (understanding the client)
2	Bovis personnel familiar with M&S projects
3	Construction team familiar with each other
4	CIP procedures in place which relate to long term strategy
5	A flexible approach adopted by Partners
6	Use of Bovis QMS
7	M&S aim to effectively identify and communicate requirements
8	M&S have in house team to develop project specific briefs
9	M&S undertaken in house management (5.4.2.4)
10	Client demand a clear contract with risks and responsibilities identified (5.4.2.4).
11	Use of M&S written contract
12	Store staff and users were consulted (5.4.3.1)
13	Project team in place early
14	Rigorous selection of contractor by client (5.4.3.1.2)
15	Client strives for defect free on all jobs (5.4.3.1.3)

16	Rigorous selection of sub-contractors by contractor (5.4.3.1.3)
17	Site managers interviewed by contractor (5.4.3.1.3)
18	Client appreciates importance of a Mission Statement (5.4.3.2.1)
19	M&S staff shown works (seeing is believing) (5.4.3.2.4)
20	Regular team meetings (5.4.3.2.3)
21	Daily programme updates (5.3.2.5)
22	Celebrations of success (5.4.3.2.6)
23	Use of standard client project appraisal questionnaire (5.4.3.3.1)
24	Pro-active conciliatory problem solving approach (5.4.3.4)

Caution points identified include:

<i>Caution Points (ineffective aspects)</i>	
1	A more rigorous Risk assessment exercise was required
2	A lack of accurate recorded documentation
3	Problems associated with selecting the right sub-contractors
4	Specification changes
5	Post contract review not rigorous enough
6	The store itself was sometimes not fully in the communication loop between Bovis and M&S.
7	Store needed to receive specification earlier
8	Fixed price contract made it more difficult to affect changes
9	Poor communication with Bovis head office (5.4.3.2.5)
10	Conflict between design disciplines due to co-ordination problems (5.4.3.2.5)
11	Lump sum single stage contract not seen as conducive to good partnering (5.4.3.5)

Key Recommendations (By Team For Better Future Partnering Performance)

- 1 Develop an approach to dealing with problems in a conciliatory manner
- 2 Consider the procurement route and the effect this may have upon relationships
- 3 Consider the completeness of design when the project is tendered on a single stage tendered project
- 4 Two stage tendering process can help share risk
- 5 Develop long term relationships with suppliers
- 6 Ensure the client needs are identified
- 7 Select the right people with the relevant experience
- 8 Remember the importance of the review process especially when partnering long term (5.4.4.2)
- 9 Development pack for store (5.4.3.8)

5.4.5 Interviews

Interviews conducted by the research team that helped in the production of this report in conjunction with various published material:

1. Atkinson, Project Manager, Bovis; Joe Sugrue, Project QS, Bovis 21/3/96
2. Andy Tim Teague, Senior Construction Manager, Bovis, 2/5/96
3. Sally Martin, Store Liaison, Marks and Spencer Bolton, 19/12/96
4. Building, 19/9/97, p26-27, Cambridge Economics
5. Colin Small, Project Director, M&S Manchester, 24/6/97
6. Bennett & Jayes, Reading Construction Forum, 10/96
7. Roger Aldridge, Estates and Store Development; Dr. Nick Penny, states and Construction Services, Marks and Spencer, 23/1/96
8. Paul Johnson, Commercial Manager, Bovis 6/3/96
9. Les Chatfield, Divisional MD, Bovis, 27/3/96
10. Richard Hopkinson, Project Manager, Marks and Spencer, 1/5/96
11. Tim Atkinson, Project Manager, Bovis, 2/5/96
12. Phil Linsky, QS, Bovis, 2/5/96
13. Andrew Dibley, Safety Manager, Bovis, 2/5/96
14. Don MacLean, Project Architect, 24/10/96
15. Mike Campbell, Hutter Jennings Titchmarsh, Structural Engineers, 24/10/96
16. Tim Atkinson, Andy Teague, 18/12/96

5.5 Bovis Case Study Comparison and Conclusions

The Bovis case studies represent an interesting insight into the Bovis approach to partnering and the influence the principal partners had upon the relationship and the project. As listed in the 'Summaries of partnering Principles' at the end of each case study, on each of the projects certain partnering principles have been employed, which according to the project participants have had a positive impact on the effectiveness of the project delivery process.

Many of these principles are embodied in standard Bovis management principles such as the Bovis QMS (Quality Management System)⁶⁰ and the standard approaches to supplier selection and performance measurement. Their implementation was effective to some extent, however one could argue that these alone do not constitute a partnering management approach, especially when one refers to the Ferodo case study, which had a range of documentation, specifically related to collaboration and partnering strategy and that the partners were implementing documented partnering procedures and monitoring their effectiveness throughout the supply chain.

Regarding the Bovis approach to partnering if we consider the QMS principles as standard management procedures that are implemented on both partnering and non-partnering projects, the Bovis approach specific to partnering becomes less rigorous and less clear. We have seen from each of the cases that the Bovis place great emphasis on client focus, open information sharing, developing a culture of trust and co-operation, and establishing co-operation throughout the supply chain. The key criteria for

⁶⁰ The relationship between QMS and Partnering approaches and principles is well documented such as Baden Hellard, 1995.

effective partnering as recommended by the Bovis project teams are as follows:

5.5	Key Partnering Principle	Associated Procedures
1	Develop & agree a partnering strategy for the project up front ⁶¹	Use of <i>Policy Documents</i> , workshops, client focus
2	Communicate strategy to project participants ⁶²	Focused set up meetings, Workshops
3	Select suppliers with an appropriate capability and expertise ⁶³	Supplier selection process, Early involvement of the contractor
4	Identify roles and responsibilities of project stakeholders ⁶⁴	Linear responsibility matrices
5	Create win-win scenario ⁶⁵	Workshops Clear and agreed incentives for stakeholders
6	Develop <i>partnering culture</i> of team working, openness and honesty ⁶⁶	Incentives, Long term relationships, Selection of compatible teams
7	Establish clear monitoring process ⁶⁷	Performance measurement system
8	Establish clear review process to learn lessons ⁶⁸	Continuous Improvement Policy
9	Clear problem resolution procedure ⁶⁹	Choice of Contract & ADR
10	Effective Communication system ⁷⁰	Compatible IT systems

⁶¹ Section 5.3.4 Key Recommendation Point 2, 5.3.4 Caution Point 2, 5.4.4.3 Effective Point 1.

⁶² Section 5.3.4 Key Recommendation Point 7

⁶³ 5.3.4 Key Recommendation Point 27

⁶⁴ Section 5.1.1, 5.2 Key Recommendation Point 27, 5.4 Effective Point 9

⁶⁵ Section 5.1.1 (facet), 5.3.4 Key Recommendation Point 3

⁶⁶ Section 5.2.13.4 Effective Point 1, 5.3.4 Effective Point 8

These are all relevant components for any formal partnering arrangement but they would seem to represent the goals not the mechanisms of how to establish and implement a clear partnering strategy. The next Chapter will attempt to distil the effective principles identified from the research so far and produce a more clearly defined set of key partnering principles, which will be tested and further developed on the Amec implementation case study.

⁶⁷ 5.3.4 effective Point 9

⁶⁸ Section 5.3.2.10, 5.4.4.3 Key Recommendation Point 8

⁶⁹ Section 5.2.13.4 Effective Point 21 & Key Recommendation Point 13, 5.4.4.3 Effective Point 24 & Key Recommendation Point 1

⁷⁰ Section 5.2.12, 5.2.13 Key Recommendation Point 3, 5.3.4 Key Recommendation Point 3, 5.2.13 Effective Point 9

*Chapter 6: Analysis and Comparison &
Presentation of Key Partnering Principles*

6 Introduction

The Literature review and Ferodo case studies suggest that a clear partnering strategy is crucial if the principles of partnering are to be rigorously implemented and monitored and for the benefits of partnering to be optimised. The evidence provided by the cases suggests that the partnering undertaken by Bovis and its Clients has not had clear partnering strategies in place, but rather more general and less formal partnering philosophies. The evidence further suggests that those management principles implemented and which are valid to partnering, have not been applied according to any partnering framework, but rather in isolation. For example the performance measurement discussed in the Bovis cases does not relate specifically to partnering performance or to any pre-agreed objectives in a partnering *Charter*.

The learning from the literature review and mini cases (especially the Ferodo example which demonstrated a more rigorous approach to partnering) illustrates that various management procedures are more applicable to partnering than others. For example at Ferodo a key principle is the Continuous Improvement Programme that exists to help monitor and improve performance. It is crucial to the partnering approach because it monitors aspects specific to the partnering arrangement.

It is worth therefore distilling the plethora of recommendations and effective principles into those more attune with partnering as opposed to those more generic project management principles as represented by for example the BOVIS QMS. The key principles identified and their relationships have been represented by a Partnering Lifecycle Model,

which describes both the high level strategic, and project specific processes.

The following sub-section presents these with a brief description. The key-partnering principles and model will then be used to investigate the case study in Chapter 7⁷¹.

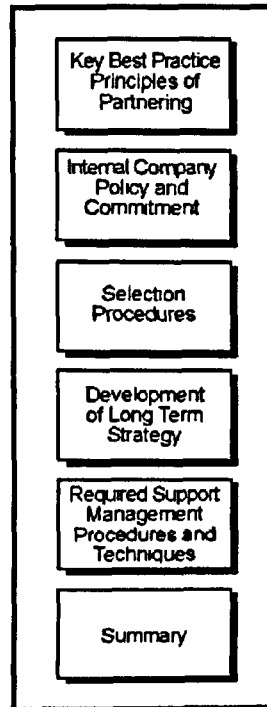


Figure 22: Chapter map for analysis and comparison: presentation of key partnering principles section

6.1 Key Best Practice Principles of Partnering

As discussed a number of key principles of effective and rigorous partnering have emerged from the secondary and primary research undertaken so far. This section describes the key principles for effective partnering development and implementation, which have been identified

⁷¹ At the time of study this example was considered to be a best practice example of construction partnering.

through the review of Literature, the mini cases and the Bovis case studies. The key principles, which will be discussed under four main headings, which are:

- Internal Company Policy and Commitment
- Selection Procedures
- Development of Long Term Strategy
- Support Management Procedures and Techniques

6.1.1 Internal Company Policy and Commitment

The research findings⁷² suggest that partnering requires an alignment of goals between the parties concerned and that the benefits of a collaborative way of working must be accessible to all concerned, in order for win-win situations to be developed. The investigations undertaken also reveal that this alignment is often lacking in construction partnering⁷³. Before the development of a partnering arrangement with another company can commence therefore, one can surmise that the driving organisation must have the internal support and commitment of personnel at all levels, as well as a clear set of aims and objectives. A *partnering culture* must therefore be developed from which the most suited partner can be selected. Longer term and project strategies can then be developed. This should not be undertaken hastily. American experience confirms that partnering is a longer-term process because it takes time to select a partner and properly develop a relationship (Bennett, & Jayes, 1995).

When intending to partner a client company must have a clear idea of why they are entering into such a relationship, and what potential benefits

⁷² Literature review Section 2.1 Manufacturing, FI group mini case.

⁷³ Contractors Questionnaire findings.

it will afford them. Based on the Ferodo experience⁷⁴ the undertaking of an internal company assessment is a sensible approach in order to validate potential partnering opportunities. The long-term business objectives can be reappraised at this stage, and the commitment of senior management to partnering sought, which is vital to partnering being adopted effectively and implemented (Lamming 1993).

After senior management commitment has been obtained it is suggested that to ensure that a *partnering culture* is developed within the company, where all personnel understand the principles of partnering and share the company partnering philosophy.

"You cannot start to continuously improve until you have a stable process.

If you say that about mechanical processes, you have to apply the same logic to a company. Until you have a company that is a stable process, with all the people working consistently towards the same goal, continuous and sustainable improvements will elude you". (Martin Miles, Managing Director, Burdon & Miles, ref: Learning from Japan, 1995)

Figure 22b suggests a model for the creation of a successful partnering culture. It considers the two separate cultures of companies A and B each possessing different skills, knowledge and experience. The model emphasises how both partners need to develop an internal policy and partnering culture within their organisation and ensure the partnering ethos is embedded in their internal company culture and that people are committed to it. Both companies can then begin to develop a partnering culture for the project or arrangement at hand. This can involve the sharing of resources (people, equipment or knowledge) and the

⁷⁴ Along with other examples from manufacturing such as Lamming 1993

development of mutual objectives, which can be represented by a *Charter*.

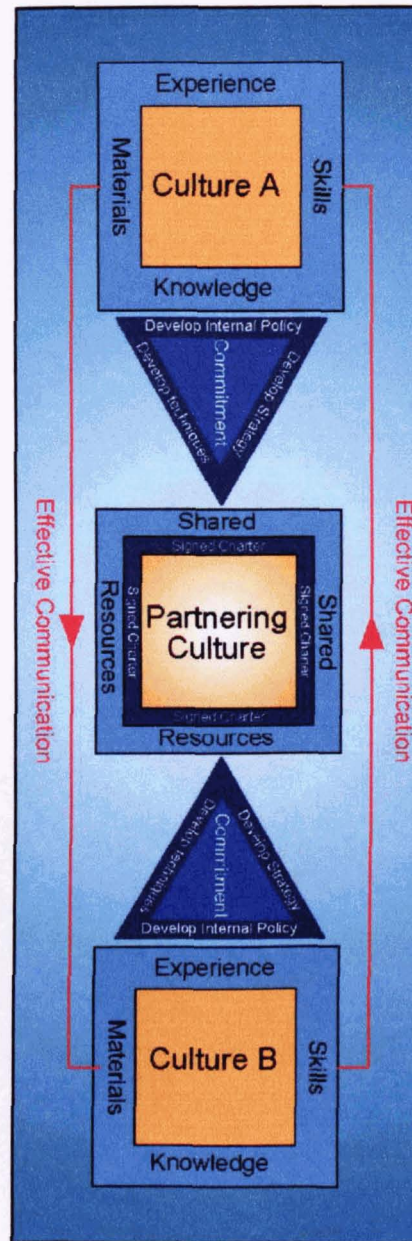


Figure 22b: Model for developing an effective partnering culture

This will require considerable time and effort and is often overlooked by senior management who can ignore views, opinions and requirements of operational personnel⁷⁵. The development of the *partnering culture* should consult personnel and allow individuals to develop their own missions and priorities. Covey (1989) discusses the importance of personnel mission statements and Fisher and Ury (1981) have identified the importance of the pursuit of personal interests in effective working. Personnel should feel that they are a part of the process of developing the *partnering culture* and such development cannot be forced. The psychological, social and growth needs of personnel must be considered (Carlisle & Parker, 1989).

Mission statements can be developed⁷⁶ and representatives or *champions*⁷⁷ from different departments or sections can attend a main workshop with senior management to ensure the interests and requirements of their subordinates are considered. From this a document can be produced encapsulating the agreed company partnering approach. It is suggested that the client will require this '*Policy Document*' before any partnering projects are driven, in order to:

- Ensure commitment of senior management
- Determine potential advantages afforded to the company by partnering
- Reassess long term business objectives and strategy
- Reviewing internal organisational management
- The first steps in forming a *Partnering Culture*
- Identification of suitable internal partnering champions
- Training internal staff
- Developing a common partnering 'mind set'

⁷⁵ Bovis Caution Summary Point no 6, Bovis Case 1 Section 5.2

⁷⁶ As recommended by the Bovis view of Partnering, Section 5.1.1

⁷⁷ Bovis Case Study 1, Ref Effective Summary Points no: 3

Ideally both Partners should have undergone the process of developing such a *Policy Document* prior to the development of any long-term strategic agreement.

6.1.2 Selection Procedures

The research has revealed that selection is critical to the partnering process and that finding the appropriate partner requires rigorous assessment procedures⁷⁸. According to the research⁷⁹ the potential partner organisation needs to be investigated in order to determine the compatibility of its culture, its management style and procedures as well as level of capability and competence. All successful companies have some form of selection procedure however this should be reappraised when developing the internal policy above. Capable companies might not make good partners if cultures or management clash or if long term needs are incompatible. When intending to partner in the public sector it is important that EC and UK procurement rules and regulations are adhered to. Guidance for compliance is given in the ECI document 'Partnering in the Public Sector' (ECI, 1997).

Effective selection might involve the client company undertaking a general survey of suitable companies in order to obtain a list of potentially suitable partners⁸⁰. This will require information on the following:

- Company reputation

⁷⁸ Crane et al. (1997), Matthews et al. (1996), (Pokora & Hastings, 1995), (Loraine, 1993, 1991 NEDC report, Egan report, Para 69, 'Ferodo Supplier Selection Day'.

⁷⁹ Ferodo, Manufacturing Lit review, Section 4.2

⁸⁰ Supplier Assessment, Yorkshire Water

- Company status
- Competitiveness
- Geographical spread
- CV's of key personnel.

Previous experience of client / contractor relationships will also be an important source of information, and in some cases a relationship might have already been developed with an ideal partner. Such companies will however still need to be rigorously assessed to ensure compatibility⁸¹. Advertisements emphasising the partnering approach can also be of use in attracting possible candidates.

When a client has compiled a main contractor short list of potential partners it can be useful to hold a 'contractor day' when key potential partners are briefed prior to making presentations to client representatives. Alternatively a project information pack can be issued. Two main routes are then available. A short list of contractors can then be selected and invited to tender using design information sufficiently detailed for this purpose. According to WG12, (1997) an ideal route is that a contractor is selected early on in the process so that client and contractor can discuss requirements up front and prior to the main workshop, where partners will work through the detailed design process together. Figure 48 illustrates the two routes and illustrates the concept of the "Contractor Day"⁸².

⁸¹ As occurred in the M&S-Bovis Case, Section 5.4

⁸² Similar in principle to the Supplier Day described in the Ferodo Case Study, Section 4.2.5.2

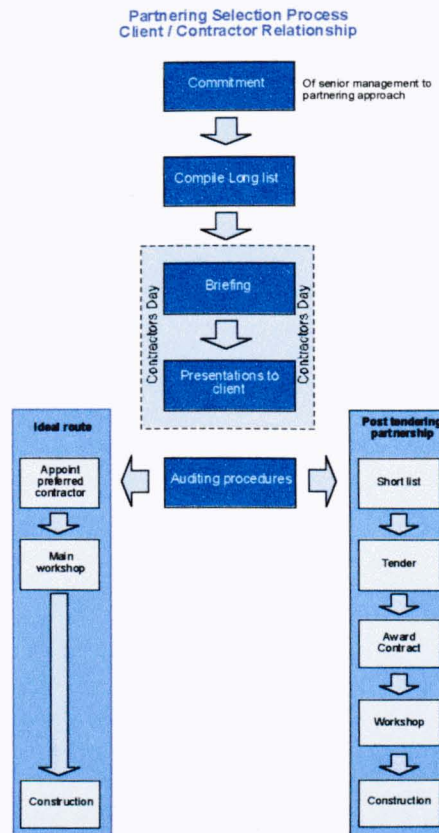


Figure 23: Partnering selection process
(Modified from 'Partnering in the Team', WG12, (1997) Page 10)

The diagram illustrates that effective selection requires assessment of two main categories, these being organisational issues and operational issues. Screening of these issues can be done with questionnaires and interviews. Organisational issues consider the management style, company philosophy on staff training and reward schemes. When undertaking an organisational assessment it is important to gain understanding on the culture of the company in question, in order to be able to identify cultural compatibility between the client and partner organisations. From the research so far we can summarise the key operational and organisational issues to be as described by Table 19.

Organisational Issues	Operational issues
Accessibility of managers to staff	Technical capability
Training levels of managers and staff	Credit control
Regular communication sessions with staff	Company quality policy
Clarity of objectives	Existence of QA written procedures
Improvement activities	Information management procedures
Employee appraisal system	Monitoring procedures
Internal team	Health and safety procedures
Recognition/ reward structure	Clarity of ownership of procedures
Levels of integration with customers/suppliers	Change control procedures
Commitment to Partnering	Project specific track record
Feedback procedures	Financial status

Table 19: Organisational & Operational issues when selecting organisations

Operational issues, which might be considered for analysis, are concerned with technical competence and capability, and operational procedures and processes utilised by the company. Besides obtaining information on capability, the operational analysis is invaluable in ascertaining the compatibility of procedures, tools and techniques of both companies.

When partnering is working fully and most effectively it embraces the whole supply chain from client to consultants to main contractors to sub-contractors to principle suppliers. (Partnering in The Team, WG12, 1997), forming a '*Partnering Chain*'. The importance of selection is vital to all of these relationships at whatever level, and ideally the main partners should be notified of partnering agreements further down the supply chain. Bresnen (1996) provides evidence to suggest that the success of formal, collaborative arrangements are often at the expense of other organisations further down the supply chain and this need to be avoided in a '*Partnering Chain*', if effective long-term relationships are to be developed.

The ability of the contractor⁸³ to effectively select organisations will be of concern to the client, yet the client will normally expect the contractor to be able to effectively select and manage suppliers in the best interests of the project. As recommended by all of the Bovis teams, trust, in the spirit of partnering, should exist at all levels so that responsibility can be taken by subordinate organisations for the management and selection of their suppliers. This 'passing down' of such responsibility has been successful in the automotive industry⁸⁴. In construction such an approach can afford benefits in the long term for both clients and contractor and help suppliers and sub-contractors focus on tasks, which is useful in developing effective empowered teams. It is therefore important to select organisations that can satisfy the long-term requirements of the client, over the period of the strategic partnering arrangement and appropriate selection procedures should be developed between client and contractor. Feedback of companies appointed and assessment results can then be fed back to the main partners.

6.1.3 Development of Long Term Strategy

The development of a long-term strategy has been identified as a key requirement to successful partnering in each of the manufacturing based case studies and has been cited as an important issue (mostly missing) in the Bovis cases⁸⁵. This requirement of Partnering will be covered more comprehensively in the discussion section following the Amec case, as further lessons will be learnt through the study of this model Partnering arrangement, (which supposedly had a partnering strategy in place at the project front end). However the main issues regarding strategy

⁸³ If a main partner

⁸⁴ See Ferodo case

⁸⁵ See Section 5.5 and Bovis Cases

development arising out of the research so far will be briefly discussed in this sub-section.

The requirements for a Long Term Partnering Strategy would seem to involve setting objectives and determining the requirements of each of the partners, in order to reach the agreed project and organisational objectives of both partners, thereby benefiting each (win: win). Both parties will to some extent, need to sacrifice their short term interests in order to cultivate long term success, and need to support the aim of enlarging mutual benefits of their interdependency and not on increasing their own share of the benefits.

Criteria that have been identified through the research, which need to be considered as part of an initial strategy involve the following:

1. Incentives⁸⁶
2. Development of joint systems⁸⁷
3. Planning of continuous improvement areas⁸⁸
4. Open system of information sharing⁸⁹
5. Mutual problem resolution⁹⁰

Incentives are important to any form of business relationship and are additionally important in motivating and ensuring momentum is maintained throughout the lifecycle of a partnering agreement. Incentives are important in ensuring attention is focused on relevant issues and serve

⁸⁶ Li, H. et al. (2000), FI Case, Procedures Implemented, Point no: 7, Section 4.3.6, Trafford Centre Case, Key Recommendation Point No: 3.

⁸⁷ Bovis Summary, Point No: 10.

⁸⁸ Baldock 2000., Ferodo Case Summary Point No: 4., Bovis Case Summary, Point No: 8.

⁸⁹ Bovis Case Study 3, Trafford Centre, Summary Point No: 8

⁹⁰ Bovis Case Summary, Point No:9

to establish rigorous measures of performance. Incentive schemes based on pain share / gain share have had proven success in the energy sector, where such initiatives have often been self-financing due to resultant savings. The setting of targets, and reward levels is a vital factor in the agreement. It is important to set achievable targets to remunerate suppliers at sufficient levels i.e. not below industry norms. Procedures should be in place to ensure suppliers and sub-contractors are paid at the correct time.

‘Disputes are normally about money’. (Project Manager, Bovis Case 2).

We have seen that the purpose of partnering is to obtain improvements to process and product over time, through the development of innovative procedures and techniques, achieved by the combination of skills and resources, culminating in improved quality, and reduced waste⁹¹. The development of joint teams is required for the level of integration necessary for effective sharing of resources, such as skills and knowledge, and in some cases physical and material resources⁹². Strategic Partnering also affords a great opportunity for IT integration due to the increased stability and cohesiveness that such long-term relationships provide. It is therefore perhaps an opportune time to develop an IT strategy as part of any long term strategy for improvement, as opposed to waiting until procedures are more rigidly set.

Both parties must measure aspects for long-term improvement and a long term Continuous Improvement Programme (CIP) based on the long-term objectives and needs of both parties could be developed to effectively manage the ongoing changes to policy and procedures.

⁹¹ Section 2.1 and mini cases

⁹² FI Group Case study

Furthermore as identified in the Bovis cases, it is prudent to identify procurement strategies for intended projects as early as possible. The strategy might utilise partnering on top of existing standard contractual procedures, an approach, which has been successfully undertaken in the construction of oil and gas facilities. (Lorraine 1994). Alternatively contractual dependency might be reduced, which requires the early consultation between parties, before the contract form is established (Bajaj, 1994). In the latter case there is potential for serious problems if something fundamental goes wrong with the partnering arrangement and there is no detailed contract to protect parties. The development of an issue resolution procedure is therefore a necessity. Although partnering is in essence attempting to avoid disputes, procedures for overcoming inevitable problems, without litigation is vital.⁹³

6.1.4 Supporting Management Procedures and Techniques

This section will not reiterate standard good practice for management procedures. Suffice to say that the adoption of QA procedures and or TQM principles to ensure development of efficient quality control and information systems is required on any project, irrespective of whether it is a partnering venture. The techniques described here have been shown through the research to be useful procedures to the effective development and implementation of Partnering arrangements, and will therefore be discussed. The key procedures and techniques that will require development are discussed under the following headings:

- Team Working
- Workshops

⁹³ Refer to 'Problem Resolution', in Management Procedures and Techniques Section 6.1.4.6.

- *Charters*
- Problem Resolution procedures
- Continuous Improvement Programme
- Benchmarking

6.1.4.1 Team working

Effective team working is fundamental to Partnering and participants in all of the case studies investigated refer to its importance⁹⁴. Teams need to be developed at all stages throughout a partnering arrangement, ranging from a principle partnering team consisting of representatives from main partnering organisations such as client and contractor, through to work package personnel. Because project contributors are often temporary on construction projects it is important to be able to set up cohesive teams in a short period of time. When we refer to teams it should mean a physical team, which has time to build up understanding between individuals and develop goals and strategies. Often teams can be identified on paper but in reality individuals have little contact with each other.

Partnering involves developing effective teams internally and between project organisations that are cohesive enough for individuals to gel. Managers should consider whether teams could be effective, if they spend little time together. Indeed one might consider whether participants at sporadic meetings once a month who have little other communication, actually constitute a team. This should be considered when assembling teams at all levels. The research has identified that there are a number of recommended Do's and Don'ts when establishing teams.

⁹⁴ Ferodo Case Section 4.2.5.5, Bovis Case 1 Section 5.2.6.5 & 5.2.7.16, Bovis Case 2 Section 5.3.2.4, Bovis Case 3 Section 5.4.3.2.3

To Do	Not to Do
Begin team working early in the improvement process	Substitute team working for good process control
Select enthusiastic & committed team members	Ignore people with knowledge of the product or process
Provide training for team leaders	Assumes that team leaders know how to lead
Use performance measures which reward team success	Assume that team leaders will be accepted by the team
Train team members to be multi-skilled	Start a team and leave them to it

Table 20: Do's and Don'ts when establishing teams
(Learning From Japan, 1995)

6.1.4.2 Team Leader Requirements

The core requirements of a team leader have been investigated by the DTI Learning from Japan Initiative and consist of the following:

- Promoter & champion of partnering
- Capable trainer, capable of training all members of the respective team in partnering
- Motivator, capable of encouraging teams to work enthusiastically and effectively
- Capable of identifying improvement areas and recommending courses of corrective action
- Capable of identifying and standardising effective procedures and ensuring conformity in operations
- Financially aware of budgeting and constraints to the required level
- An awareness of impact of internal actions on the functions and roles of other organisations
- An understanding and awareness of other team roles and responsibilities

- An effective communicator, internally and externally to other operational teams, consultants & senior management
- Ability to take the initiative, and make decisions

Source: Learning from Japan, DTI, 1995.

The above team leader profile describes the main requirements of a project level team leader. A strategic team leader would need all these skills and be able to effectively balance the needs of the client with those of the company as well as long-term strategy with individual project efficiency. Team leaders can be the partnering champions and responsible for ensuring the team operates to the principles of partnering regarding, continuous improvement, goal setting, problem solving and open communication. Importantly they are responsible for motivating the team, and ensuring it works as a cohesive unit. They therefore must devote their time to their team and should not 'spread themselves too thinly' as is often the case in construction with individuals working on several jobs simultaneously.⁹⁵

Effective team work is vital to the development and implementation processes of any continuous improvement programme, and it is important to acknowledge that the people working on a particular job at a particular time, will know most about it. Effective teams and the individuals within need to:

- Mutually set team goals (within the requirements of the main partnering strategy)
- Fully understand and commit to those goals
- Clearly define roles and responsibilities

⁹⁵ Although this is often unavoidable as illustrated in the Bovis Cases due to workload and continuity issues, it should be recognised as a problem to effective team working and team building.

- Provide a clear indication of progress
- Effectively record team decisions and actions
- Effectively communicate activities to other teams

Internally teams can and do work effectively in construction. However most of the problems arise when integrating unfamiliar teams at the operational level, for relatively short periods of time. This is when the development of partnering champions throughout the project, can be invaluable⁹⁶. Champions briefed on partnering requirements and procedures, should be able to communicate more effectively, and possess a greater understanding of the needs and requirements of other parties. They can help to ensure the effective operation and communication between the different types of partnering team required to successfully operate a partnering agreement.

6.1.4.3 Partnering Workshops

Partnering workshops are vital in forming teams, setting goals and procedures and identifying potential problems⁹⁷. Relevant personnel should attend the workshops at whatever level (initial partnering workshop main project workshop, work package workshops). The objectives of the workshops should be fundamentally the same in that questions should be posed, and solutions formulated prior to the commencement of the work. According to Smith (1996) the main things to consider are:

- Goals

Main interests in project

Achievable goals

⁹⁶ Bovis Case 2, Key Recommendations, Point No:5

⁹⁷ Smith (1996)., Ferodo Case, Procedures Implemented, Point No: 3, Sections 2.2, 2.3.5, 2.4.2, 2.4.4, 4.2.9 Effective Point 3, 5.3 Caution Point 3, 5.5

- Opportunities
 - Areas for improvement*
 - Measurable objectives*
- Problems
 - Potential barriers caused by us*
 - Potential barriers caused by other contributors*
- Procedures
 - Improvement programmes*
 - Problem resolution procedures*

At each level in a long-term agreement, there will be teams that will need to be brought together in order to specify goals and opportunities, develop procedures and overcome problems. Workshops therefore will be required to focus on requirements of each stage and to develop strategy. Such workshops, especially the main start-up workshops of long term or project agreements, can be held at a neutral site, away from the individual cultures and corporate environments of each. Representatives of all main teams who can have an input at that particular level should be in attendance. It is however difficult to run a successful workshop of this sort with more than 15 people and hence the requirement of other workshops dealing with other levels of the project⁹⁸.

A main project-partnering workshop is vital in forming a cohesive team from what is normally a number of different organisations who have never worked together, with perhaps no experience of each other and perhaps little experience of partnering. The main objective of the client and contractor partner is to get project contributors to 'buy in' to the partnering concept and to work within its general requirements as developed by client and contractor, and to develop more specific

⁹⁸ Learning from Japan

procedures using their respective expertise and experience. The project organisations need to be convinced of the worth of the partnering arrangement, and a clearly presented workshop with a concise agenda and development of useful outcomes (such as roles and procedures) is a good way of obtaining this⁹⁹. Most organisations will wish to obtain future work on any LTSP projects, and will be trying to impress. It would seem that the workshop shouldn't be telling people how to do their jobs, but should set the project context, set out what the client wants from the project and from its team, the organisational responsibilities of organisations regarding selection and treatment of suppliers, and resolution of conflicts¹⁰⁰. It should raise potential problems at an early stage by calling on the experience of participants and should result in a set of clear objectives and strategies. No one should be afraid to air their views and all should get a say. On larger projects, project organisations might be expected to take such ideas and educate incoming sub-ordinate organisations at other levels in the project process. The ability to successfully partner with their suppliers and subordinate organisations will be seen as an important factor in the decision by the main partners to offer more work to a company. Key project organisations will therefore be advised to undertake workshops in order to ensure aims are understood that appropriate incentives are in place (for perhaps short-term organisations), to develop suitable procedures and to avoid conflict, at the specific project level. Facilitators can be used to help successfully achieve these factors.

6.1.4.4 Facilitators

In the US a new profession has appeared in recent years that of the partnering 'facilitator' who help organisations understand their roles and

⁹⁹ As the Ferodo example demonstrates

¹⁰⁰ CIB WG12 Document 1997

requirements for the project in question, help teams set mutually acceptable objectives and aid in the formation of procedures and strategies¹⁰¹. Such a role, if undertaken fairly and objectively can help project personnel at all levels develop confidence and trust in the approach, and help parties understand the requirements of client partnering policy's. Facilitators can be of great help at a project level in helping teams come to terms with partnering requirements often within tight time constraints. Such facilitators need to be highly skilled mediators, experienced in construction and able to undertake workshops at a variety of levels. Facilitators can often take on an adjudicator's role for a project and in these circumstances it is important for the facilitator to be neutral. The research reveals that facilitators are not as commonplace in UK partnering as in the US and that often the role is undertaken in house by the client,¹⁰² and consequently is at risk of not being objective and independent.

6.1.4.5 Charters

*Charters*¹⁰³ are important in showing commitment by organisations to the aims and objectives procedures and strategies developed between the organisations at the respective workshops. They should not be confused as a contract. All in attendance of the workshops should use them in order to commit to the procedures and philosophy's developed¹⁰⁴. The *Charter* itself can be a simple document and be supported by the relevant documentation regarding agreed procedures and techniques. A *Charter* might include the following points to which participants need to commit. If commitment cannot be obtained then participants can re-discuss the aims and procedures as required, until agreement is reached.

¹⁰¹ NEDC Report "Partnering Without Conflict" 1991

¹⁰² As in the Case of ASDA

¹⁰³ Section 2.3.5 Smith definition of *Charter*, WG12

¹⁰⁴ As implemented at Ferodo

Suggested *Charter* objectives are:

- Complete project to time, without delays
- Complete project to highest quality standards and defect free.
- Complete project without claims
- Complete project safely and with no injuries
- Aim to continually improve the standard of our service
- Be open and honest
- Solve problems at lowest level if possible and at point of origin
- Adhere to allocated time for resolution, then move up to next level

Charters can be used as a key tool in reviewing performance at the end of the agreed Partnering term.

6.1.4.6 Problem Resolution Procedures

From the conflict section¹⁰⁵ we can surmise that some problems will almost always occur within a process as complex as construction and pre-defined resolution procedures are of great use¹⁰⁶. The main principal for dealing with problems is to attempt to resolve the problem at the lowest level, within a given time scale. It is important that there is input into developing solutions from all parties affected by the problem and that there is a clearly identifiable team in place with the task of finding a solution to the specific problem. If a solution cannot be found in the given period, the problem should be passed on up to the next level (the team for which should also clearly identifiable). A problem resolution procedure should not be contractual and there should always be an honest attempt to resolve the problem without resorting to the contract. A

¹⁰⁵ Section 2.6

¹⁰⁶ NEDC, (1991), Bovis Case Comparison Point No:9

partnering arrangement helps create the trust that is required for this to occur effectively.

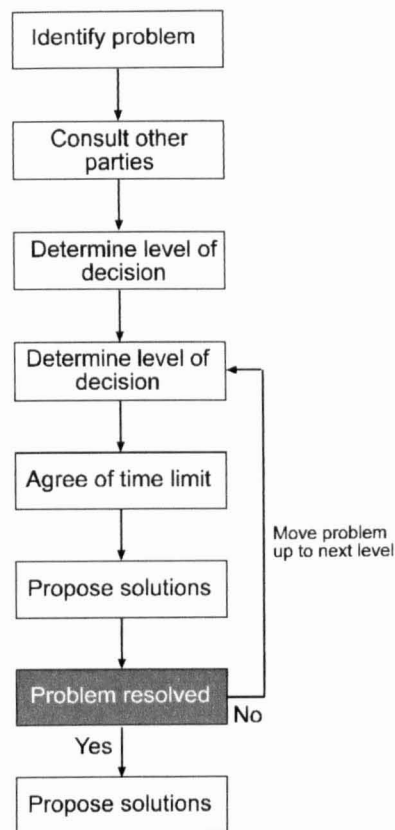


Figure 24: A basic problem resolution process¹⁰⁷

Although partnering is geared to reduce the likelihood of problems developing into actual disputes there is still the need for more formal dispute resolution procedures to be in place if the problem resolution procedures fail to find an adequate solution. Latham (1994) recommends that adjudication should be the normal method of dispute resolution. Other more formal procedures might be required to resolve problems or conflicts between different organisations such as Alternative Dispute Resolution.

6.1.4.6.1 Alternative Dispute Resolution

Even though formal problem resolution procedures are required in any partnering arrangement Alternative Dispute Resolution (ADR) can be utilised¹⁰⁸ on a partnering project, and preferred approaches should be considered at the outset of a partnering relationship.

6.1.4.7 Continuous Improvement Programme (CIP)

Continuous improvement is central to partnering¹⁰⁹ and one could argue that without a CIP in place then you are not really partnering at all. It serves to bind the objectives and requirements of all parties by providing benefits to clients, partners and the project as a whole. In Japan 'Kaizen' has been used to manage continuous improvement¹¹⁰. The approach draws on the whole workforce to ensure incremental improvement (Bennett & Jayes, 1995). Many of the ingredients of a successful Continuous Improvement Programme should be discussed at the workshops. The specifics should be brainstormed within each team at whatever level. Main questions might consist of:

- What are the potential Improvement areas?
- Who do we need to work with to plan the improvement?
- Who needs to be involved in implementing the improvement?
- What are the potential barriers to the proposed improvement?
- How can the improvement be measured?

¹⁰⁷ Partnering in the Team, WG12, 1997

¹⁰⁸ Section 2.7, Section 5.5 Recommendation 9

¹⁰⁹ Section 4.2.5, 4.2.9 Effective Point 4, 5.4.4.3 Effective Point 4

¹¹⁰ Hence the rigorous adoption of the CIP by Ferodo who were investing time and resource in learning from Japanese partnering methods.

The continuous improvement processes should be active at all levels in a partnering arrangement, and the improvement tasks to be undertaken will be based on the requirements and objectives of the particular team. For example the senior management team will need to work out what improvements can be made long term, project level teams might be focusing on improving within the duration of the project. The improvement process should remain the same at whatever level it is being implemented. The following illustrates appropriate key stages in such a process¹¹¹.

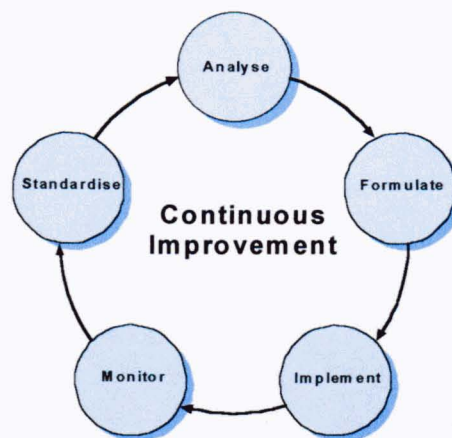


Figure 25: The continuous improvement process

6.1.4.7.1 Analyse the problem

After a problem has been identified it needs to be analysed by the appropriate team. Certain teams might be made responsible for specific improvements as part of the initial improvement areas required by the main partners, or senior project members. The necessary functions need to be consulted, and all existing data should be gathered regarding the current process, team and main problem areas.

¹¹¹ Based on the Ferodo case example and the Bovis Improvement Initiative.

6.1.4.7.2 Formulate action plan

The team need to work collectively to formulate an action plan and brainstorming and discussions are important for airing ideas and concepts. Potential solutions to the problem should be prioritised into major and minor activity items, individual responsibilities should be agreed and the costs of implementation should be identified. Targets dates need to be agreed before implementation.

6.1.4.7.3 Implement action plan

All necessary functions need to be alerted before implementation of the action plan. Prior to any implementation it is recommended that all relevant teams are consulted and that the relevant departments obtain agreement for the action. This is vital if any changes are to be recorded effectively and in identifying any initial inadequacies with the proposal. A change control form can be utilised to log information regarding authorisation and will be required to be complete before any changes can be undertaken. Changes not only affect the internal procedures of a company but can require the agreement of other disciplines and organisations as well. It is important that all relevant teams are contacted a early as possible, so that additional training can be undertaken if required and other preparatory steps taken by those affected,

Minor items can be tried first before major items are implemented. It is important that relevant other organisations work is not disrupted, and that the team is motivated to solve the problem in the required time. A cohesive team and a sense of fun with bright ideas and successes being appreciated and rewarded are important factors in overcoming individual problems and improving performance.

6.1.4.7.4 Monitor Performance

Certain corrective actions will require variable amounts of time to be fully implemented (hence minor and major actions) and progress needs to be closely monitored in order to ascertain the degree of improvement if any. Action reports are useful in obtaining a snapshot of progress to date and will include information about the degree of completion, satisfaction level regarding performance and recommendations. General tools can be used for measurement such as Trend to Target, Pareto Analysis and Fault Monitoring for obtaining levels of effectiveness.

6.1.4.7.5 Standardise Procedure

When actions provide measurable improvements over standard procedures, they can be replaced or modified. QA procedures will probably need updating with changes to quality manuals for main procedures and functions being required.

6.1.4.8 Benchmarking

Benchmarking¹¹² offers an opportunity to identify best practice in a particular area so that tangible improvements can be made to management and operational procedures in the organisation or industry under investigation. The 'benchmark' enables improvements to be measured and to use the oft-quoted maxim 'what can be measured gets managed'. Managers will actively search for best performance regarding a process, which might be within their own company, within a partner organisation or elsewhere in the industry. There are a number of types of benchmarking (Harrigan, 1998)

- Benchmarking perceived best-practice in own industry

¹¹² Ferodo Section 4.2.6, WG12

- External benchmarking by looking at how other industries perform particular functions
- Internal benchmarking comparing practices and procedures to promote harmonisation within the organisation

Assessment with current procedures and processes can then be analysed and compared with best practice methodologies so that measurable improvements can be identified. Whichever type of benchmarking is undertaken the first task is to analyse current practice and Cook & Hancher (1990) provide a useful 10-point checklist for analysing processes:

1. Output
2. Customer
3. Customer requirements
4. Process owner
5. Start and end points
6. Steps involved
7. People, departments, suppliers involved
8. Time scales
9. Cost
10. Perceived problems

One of the benefits of benchmarking is that companies begin to look at what they are actually doing. In Construction when considering partnering and with the emphasis upon a client focus the above checklist provides a number of key performance indicators where improvements can be measured.

6.1.4.9 Partnering Assessment Procedure

For an on-going assessment of partnering, regular ‘snapshots’ of overall performance are required. A team leader on a regular basis such as each week, every fortnight or on a monthly basis can undertake these. The team leader can fill in the assessment form using available data from CIP and problem resolution procedures, as well as his overall impression of the job and team performance for that particular period. Changes in performance over time can then be plotted using a simple summary table.

It is also important to obtain regular feedback¹¹³ from all team members regarding their views and experiences of the main partnering criteria such as responsibilities, effectiveness of teams, performance issues such as quality and time, as well as the effectiveness of improvement and problem resolution procedures. Individual team members should be given an opportunity to comment on problem areas, suggesting possible reasons for such problems, which can then be discussed at team meetings and which can be fed into the Continuous Improvement Process. It should be made clear that these forms are not assessing individuals but are there to flag up problems, and identify opportunities for team improvement. All members need to fill in the forms honestly and accurately. Team leaders can also use this data when preparing their assessment forms. Also, the awareness by the team leader of the problems raised by team members will be an indicator of the effectiveness of communication between the team and the team leader.

6.2 Key Principle List

This Chapter has discussed the partnering principles identified from the research so far and produced a list of high level key principles for use when

¹¹³ Section 4.3.3.1, Section 4.4.2 & 5.2.6.5

investigating the ‘model’ partnering arrangement. The key principles are listed below.

6	Key Partnering Principles
1	Company Policy & commitment
2	Selection Procedures
3	Long Term Strategy
4	Team Working
5	Team Leadership/ Champions
6	Partnering workshops
7	Objective / independent Facilitators
8	<i>Charters</i>
9	Problem Resolution & ADR
10	Continuous Improvement Programmes
11	Benchmarking
12	Partnering Assessment Procedure

It is has been shown through the cases that these principles are effective and contribute positively to project efficiency when applied even in isolation. It is hypothesised however that if they are tailored to fit with a partnering framework which describes and communicates a rigorous partnering approach and associated management principles, then even greater benefits will be afforded. The following sub section provides a model, which describes such a framework.

6.3 The Partnering Lifecycle Model

The Partnering Lifecycle describes the recommended relationship between long term ‘strategic partnering arrangements’ and short term ‘Project Specific Partnering processes’. The research has revealed that

best practice is achieved when Long Term Strategic and Project Specific principles are used in conjunction with each other¹¹⁴.

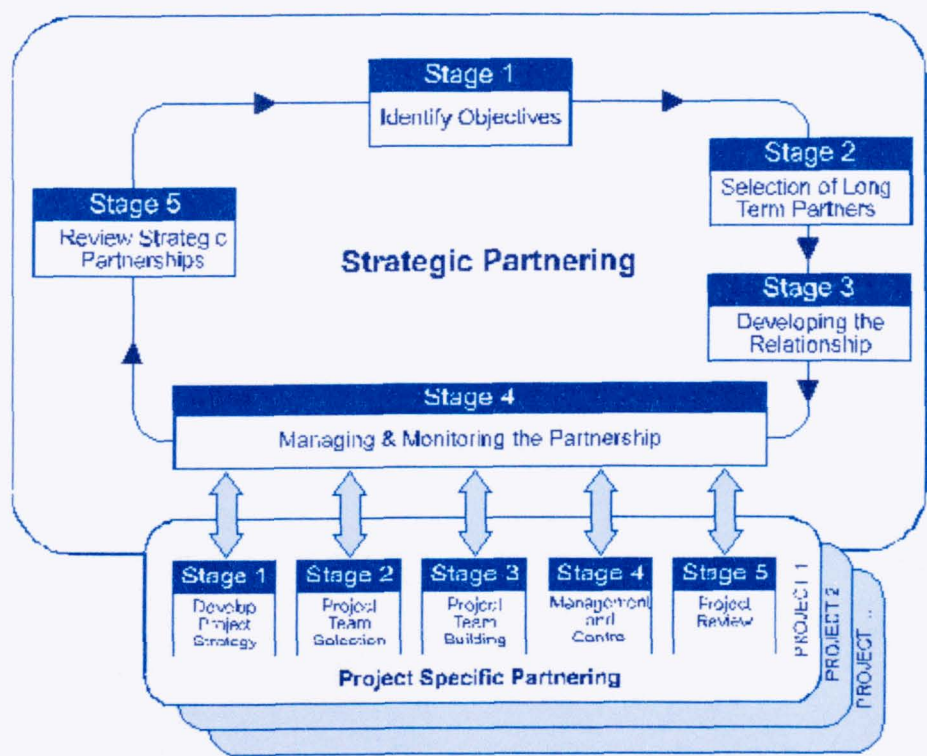


Figure 26: The Partnering Lifecycle

Figure 26 recommends there are five key stages in the development of both strategic and project specific processes. The stages and their corresponding aims as revealed by the research are listed below.

Strategic Partnering Stages	
Stage	Aim
1. Identify Objectives	The development of an internal Policy Document
2. Partner Selection	Choosing the right partner
3. Developing the	Establishing teams and methodology

¹¹⁴ As seen in the Ferodo Case and Bovis/ M&S examples

Relationship	
4. Managing and Monitoring	Continual Assessment and problem identification
5. Review	Review of overall partnering policy

Project Specific Partnering Stages	
Stage	Aim
1. Develop Project Strategy	Identifying Project Objectives and Procedures
2. Project team Selection	Rigorous Selection of Compatible Companies
3. Project Team Building	Team& Strategy Development
4. Management & Control	Continually Check Results with Objectives
5. Review	Assess Performance and Learn Lessons

The research suggests that the two processes should be implemented in conjunction with one another as shown. Once there is a long term relationship in place consisting of a strategy for improvement over the longer term period, the Project Specific Process can then be implemented on individual projects, from which project specific information regarding performance, can be fed back into the overall long term strategy for comparison and assessment. The long-term strategy can then be modified as required. The Project Specific Process is additionally important in nurturing relationships with a view to partner further down the supply chain, for example between contractor and sub-contractors and / or suppliers. The effectiveness of the long-term strategic arrangement is therefore highly dependant on the development of such an integrated *Partnering Chain* throughout the project.

6.4 Summary

This Chapter has identified the key principles discovered so far by the research and produced a recommended lifecycle model, which describes

the key stages in the Long Term Strategic and Project Specific processes. The model also describes the key aims of each stage.

Chapter 7 will investigate a ‘model partnering arrangement’ between BAA and Amec, which is supposed to have such a rigorous strategy in place, developed through a long term five-year ‘Partnering Framework Agreement’ championed by the client and implemented between the main project participants including key suppliers.

The effective partnering principles will be identified as in the previous case studies and recommendations will be recorded for use in developing the partnering framework and further defining the partnering implementation processes, which are the main outputs of this research and are discussed in more detail in Chapter 8.

Chapter 7: Case Study 4; A Model Partnering Arrangement

Amec & BAA The Partnering Framework Agreement developed and
Implemented by the Pavement Team

7 Introduction

The three case studies previously discussed provided detailed accounts of the development and implementation of partnering on single projects. Although some partnering principles were evident in these examples partnering was not rigorously implemented in that it did not fundamentally change the way the project was planned, procured and managed. As discussed in the previous Chapter the partnering principles employed on these projects were not implemented in accordance with any rigorous partnering strategy or framework that had been established at the project front end. Therefore in order to effectively produce a generic set of processes for partnering it is important to investigate a 'model' project that has (or reportedly has) such a partnering framework in place. Evidence for the effective use of the key principles can be gathered and any other principles that have been utilised successfully on the project can be identified. Importantly the existence of a strategy upfront will allow us to identify the process of partnering implementation, which will assist us in the development of the generic partnering processes.

Model partnering arrangements in the construction sector are still relatively uncommon, however access to a Framework Agreement between a major international contracting organization Amec and global client British Airport Authorities (BAA) was attained. The partnering arrangement was based on a formal partnering Framework Agreement and was in part developed and implemented with the help of a partnering facilitator. The agreement had been in operation for a period of two years at the time the

research commenced and several progress reports had been documented. The case study firstly describes the partnering arrangement, how it came about, why it was required and its perceived performance to date. Amec documentation including progress reports was used to provide the project overview. A series of surveys consisting of a questionnaire survey and a series of structured interviews to both upper and operational management were then carried out to investigate the Framework Agreement in more detail. The Chapter Map for this section is illustrated below.

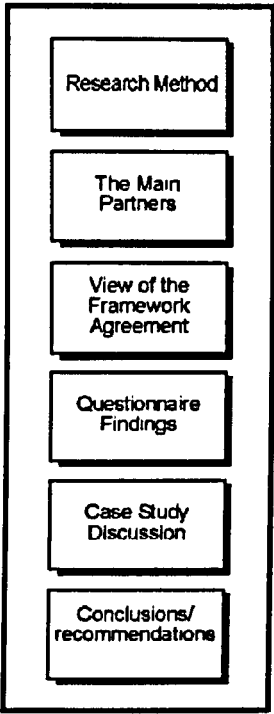


Figure 27: Chapter map for case study 4: a model partnering arrangement section

7.1 Research Method

In order to ascertain the effectiveness of the partnering according to the actual participants and learn appropriate lessons regarding partnering principles, strategy development and implementation a series of structured interviews were undertaken and a questionnaire was distributed to the key

participants in the Pavement Team¹¹⁵. (Please see Appendix 2 for a copy of the questionnaire). This research was undertaken with a variety of different people from the contributing organizations ranging from senior management (strategy level) through to operation staff on the Pavement Team itself. This approach enabled the research to establish a comparative assessment between the views of the team working within the partnering strategy with those of the management team responsible for putting it in place. The questionnaire is based upon the key principles identified so far and investigates company policy towards partnering and individual views on partnering arrangements. The structured interviews focus on the partnering Framework Agreement being implemented by the pavement team. The case study culminated in a one-day workshop to Amec board members in order to present the key findings and to identify criteria for improving partnering at Amec.

The board gave feedback and comments regarding the partnering processes. These were in turn modified according to the case study output.

7.2 The Main Partners

Amec Civil Engineering is part of the Amec Group whose turnover in 1998 was approximately £2.5 bn. The civil engineering arm first became interested in the partnering process was in 1994 following the publication of the Latham report. Prior to this company had felt that clients were not embracing partnering fully enough to warrant any changes to procurement procedures. However subsequently, client awareness was significantly enhanced and this coupled with the success that a sister company had in the North Sea with alliancing arrangements (following the CRINE report) was

¹¹⁵ The Pavement Team was the newly formed team, which was created as a direct result of the Framework Agreement.

enough to *“convince us that to maintain market share we would have to look to partnering as a better way of working”¹¹⁶*

7.2.1 Company Changes

Amec realised that in order to equip themselves with the desired new way of working they would have to make changes and although they prided themselves on not being as aggressive as most major contractors they felt they still had to break the old ‘get as much as you can’ culture and ‘look to relationships of *trust, openness and honesty*’.

They did this by first training the staff as best they could regarding partnering and then entered into discussions with Amec Process & Energy to learn lessons from the oil industry.

Most importantly they tried to become more client focused and to understand exactly what the client wanted from partnering. They found that the client perception of partnering varied considerably including:

- Supply agreements
- Extended arm
- Construction management
- Project management services
- Framework Agreements
- Project Specific Partnering

¹¹⁶ Managing Director of Civil Engineering Division.

Over the 18 months prior to the research commencing Amec had also secured an £80m project with Portsmouth wastewater and another £80m project with Newport wastewater. The 5-year Framework Agreement with BAA was worth £150m over 5 years.

The procurement criteria for these contracts were radically different from the traditional. On the BAA contract 60% of the award was based on soft issues that centred on attitude, culture, commitment and capability. Only 40% was based on price, which included activity schedules, unit rates and fee as well as four sample contracts.

On the water treatment plant contracts the award was made entirely on soft issues with the only figures consisting of fees and staff rates. This move away from awarding a contract based on the written word over to awarding based on confidence in the team has according to Amec had a considerable impact on the way the companies operate at a project level.

“The demand for estimating resources has dropped and management time in pre-qualification and tender has increased dramatically.”

Operational staff become more involved in marketing and the bid process and commitment from the team is important, as they have to be committed to a project at the time of tender because the selection is based on the teams ability more than price.

7.3 Overview of the Framework Agreement

BAA is an organisation which controls and operates a series of major airports in the United Kingdom and consequently has a large number of contracts with a variety of organisations in order to maintain its facilities as well as to develop new accommodation and facilities as and when required.

BAA has a history of developing long-term relationships with its suppliers and has used term contracts for many years. The arrival of a new CEO, who had developed many successful partnering arrangements, saw the introduction of a strategic partnering policy consisting of number Framework Agreements.

The Framework Agreement attracted much interest from the industry press as it was certainly a bolder approach and seemingly consisted of a more rigorous strategic plan than was the norm. It covers a series of contracts totalling about £30million per annum for the construction and reconstruction and maintenance of airfield pavements at Heathrow, Gatwick, Stanstead and Southampton. Each contract in the range of £100k to £10million has its own target cost and is let on the N.E.C option C form of contract.

The BAA agreement was awarded in October 1995 with the first contracts to start in January 1996. Amec were euphoric as it was the first major framework they had won and they had fought off stiff competition.

The airports operator builds or maintains many thousands of metres of runways, taxi ways and aircraft stands each year and the Framework Agreement was developed in order to 'improve project delivery'. The agreement was active at three main airports in the United Kingdom. BAA understood that to achieve savings as high as 30% would take time and their approach was therefore one of steady progress and of consolidating the gains at each step, hence their desire to establish a 5 year framework agreement with Amec.

The aim of the partnering agreement was to achieve considerable performance improvements driven predominantly by BAA's own Global targets for improvement. These demanding targets consisted of:

Project Cost Reduction (Reduction in project construction costs from 1995/1996 Benchmark)			
97/98	10%	2000	30%
Project Cost Predictability (Projects completed within agreed budget)			
97/98	85%	2000	95%
Project Programme Reduction (Reduction in programme from 1995/1996 Benchmark)			
97/98	10%	2000	40%
Project Programme Predictability (Projects completed within agreed programme)			
97/98	85%	2000	95%
Accident Frequency Ratio (Accidents per 100,000 man hours worked)			
97/98	0.7	2000	0.5

Table 21: BAA global targets for improvement

The main partner, Amec Civil Engineering was chosen based on its interest and capability to long-term improvement rather than in the apparent cheapest initial price.

Personnel from both partnering organisations were moved into the same offices and merged into a team with its own unique identity. Previously personnel from each organization were not located under the same roof. From the outset of the partnering arrangement joint offices were established at each of the airports, normally consisting of a site office and an off-site design office, which would liaise with the airport and capture requirements. The nature of the work was associated with the repairs on the runways and as a result the team became known as the 'Pavement Team'.

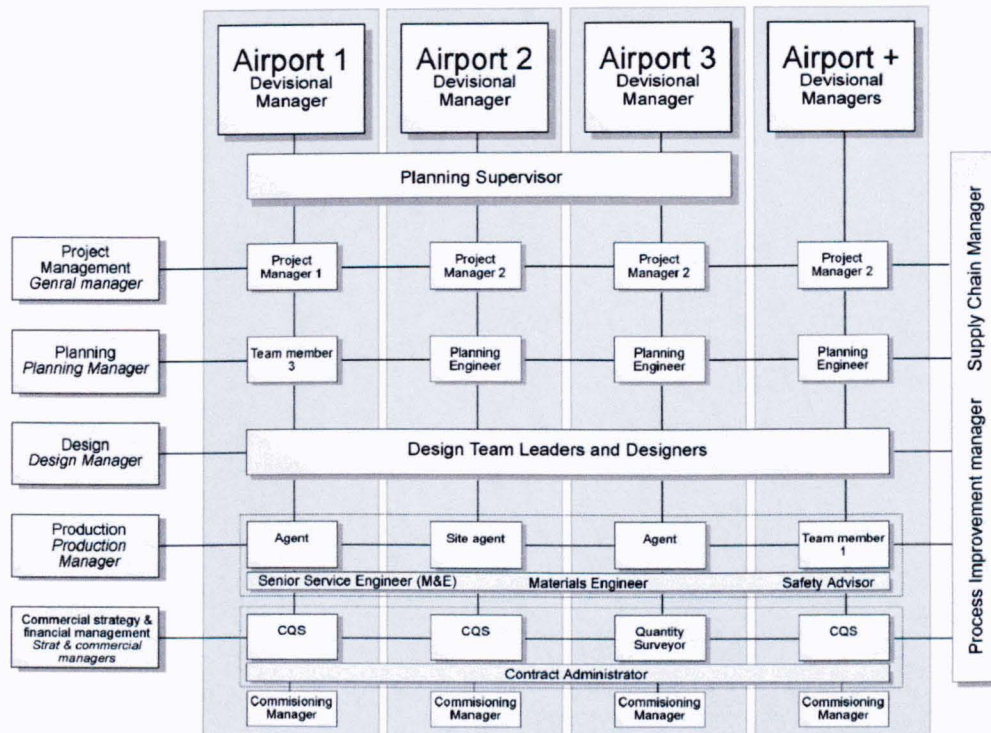


Figure 28: Management structure of pavement team

A Framework Management team was set up which consisted of personnel from both BAA and Amec. The structure of this team is shown in Figure 28.

The development of the Pavement Team identity was the result of three two day partnering workshops, the first of which involved forty senior managers from the main partner companies and main suppliers and the other two involving a further 80 people including managers from non partner organisations who would interface with the partnering team. A leading partnering facilitator, who assisted in formulating the vision for the future and finding the way forward, ran these. It was emphasised that there would have to be real commitment real trust and cooperation and a willingness to take risks.

The quantity surveying function was replaced because according to the facilitator *“no true partnering arrangement could function with a QS busy representing what were traditionally opposing interests.”*

A Mission Statement was drafted which read

“Through trust and corporation, we are committed to develop construct and maintain air field pavement’s of outstanding quality of value”.

A Charter was compiled which consisted of the following goals:

1. Give safety and security the highest priority at all times
2. Through training, education and communication, engender a positive safety attitude from day one
3. Be environmentally sensitive
4. Successfully plan and resource the entire project process
5. Make efficient use of resources and provide continuity
6. Communicate effectively by getting the right message to the right people
7. Communicate effectively at all levels and find the right solutions
8. Set challenging performance targets and improve upon them
9. Recognize individual and collective achievements and contributions
10. Encourage and evaluate innovative approaches to all our processes and products

11. Train and develop a dedicated committed long-term enthusiastic team
12. Achieve sustainable cost reductions year on year
13. Get it right first time and add value by all we do
14. Be integrated, unified and cohesive and have others see us this way
15. Create a framework that is so inherently successful that benefits become self evident
16. Continually measure and monitor performances to demonstrate benefits of partnering to others
17. Gain and maintain the confidence and contribution of all stakeholders
18. Maintain operations and services during construction to satisfy our operators and users
19. Make provision for a realistic time scale by assessing and anticipating future challenges
20. Achieve the highest quality lowest maintenance product through continuous improvement, standardised specifications and attention to detail
21. Use our unique framework relationship to develop and implement best working practices for the improvement of airfield engineering
22. Make coming to work a pleasure
23. Instil a team spirit and succeed by building a close working relationship

24. Exceed our customers expectations

25. Develop a new culture, which will be beneficial to all

26. Become the pavement and partnering benchmark for the construction industry

An evaluation form was compiled based on the *Charters 26* fundamental principles. Copies could then be distributed to Project Partnering team members every six-months in order to rank the overall effectiveness of the partnering effort on a continuing basis. Faultfinding was deemed to be fine as part of the improvement process but had to be on the basis of no blame.

7.3.1 Initial problems

According to Amec, they started off with great enthusiasm, but they were confused on how to build a single team. In reality and despite the good intentions we didn't understand our partner's intentions. In order to address this problem a professional facilitator was employed to bring the team together. This occurred three months and the team moved forward 'through transition and towards togetherness'.

*'We started without conflict but we had no discipline. The new engineering contract stayed in the drawer and we proceeded without using it even as a management tool. Our first contract started seven weeks late due to a lack of information and we agreed to attempt completion on time without recording a compensation event.'*¹¹⁷

¹¹⁷ Nic Yeoman, Production Manager, the Pavement Team

Unsurprisingly according to Amec they soon began to suffer losses as a result of the acceleration measures that were being utilised in order to make up time, such as nighttime and weekend working. There were also similar examples in the first few months of the agreement. Amec went to the client retrospectively for extra payment, 'in spite of our failure to comply with the contract procedures'.

The true impact of the partnering began to hit when the client made extra payment without dispute. The client had been involved continually as part of the partnering agreement with total openness, and recognised the entitlement because the team were trying to deliver on time. One of the most important lessons learnt in the first year of the arrangement was to use the contract as a management discipline. The team then started to use the contract more fully but on a very open book basis and within the spirit of partnering.

Other problems centred around the presumptuous and over enthusiastic approach to openness and sharing of resources. As mentioned BAA were located within the Amec staff open plan offices and had a computer access to the Amec Network, including all cost and accounts information.

"This enlightened attitude failed because of the lack of training given to both our own staff (our internal cost control system had just changed) and to BAA's staff who found contractors accounting and costing systems quite alien"¹¹⁸

¹¹⁸ Andy Delcher, Amec, Planning Manager, Ref Appendix 2

The final key problem that had been identified by Amec and BAA through the early stages of the agreement was that of the management structure. Amec and BAA had discussed and developed a suitable management structure for the operation of the Framework Agreement but had not had sufficient discussion with the individual airports, which are in fact four individual clients.

Their exclusion from the processes had caused some resentment among certain project management staff and the new 'Pavement team' initiative was seen as a threat to their traditional role and perhaps their employment. This problem was however largely addressed by the workshop held in March 1996, but it does demonstrate the importance of involving all stakeholders.

There were also initial problems with the Framework Management Team, which had been initially set-up on the 'best person for the job' attitude. The result was a well meaning policy but which turned out to be a managed by committee approach with a lack of leadership, and this contributed to a lack of decision on nearly all subjects in the initial period of the agreement.

"It is true that the team working is more comfortable and conforms with the partnering ethos, but the team must be balanced and include a leader." Nic Yeoman, Production Manager, AMEC, Pavement Team.

Even though there had been some serious problems during the initial stages of the partnering the team did not lose belief in the partnering approach, as stated in the internal partnering report of 1997.

“All forgoing problems might lead to the belief that partnering doesn’t work. Nothing could be further from the truth. In fact because we are partnering the problems have been overcome and we are providing benefits to both BAA and Amec” Nic Yeoman, Production Manager, AMEC, Pavement Team.

7.4 Questionnaire

The Questionnaire survey was undertaken in order to identify if the initial problems encountered in the early stages of the Framework Agreement were improving and to capture the differing views if any, between the various participants in the partnering arrangement at both senior and operational management level. The survey design was based around the key principles identified in Chapter 6 in order to enable an assessment of how effectively they were implemented.

The questionnaire is split into the following sections

1. Background information
2. Strategy & Policy
3. Leadership
4. Quality Management
5. Innovation
6. Operational Management
7. Roles & Responsibilities
8. Attitudes on Partnering

The survey consists of 67 completed questionnaires. The types of respondents were split into several categories. These consist of:

1. Upper Management

Director level from both BAA and Amec

2. Senior management

Project, design or commercial management level from both BAA and Amec (non-board level)

3. Pavement team

Ranging from operational staff through to project management

4. Northern region

A range of individuals from Amec Northern

5. Southern region

A range of individuals from Amec Southern

The questionnaire utilises a five point Likert scale with the following terminology.

Response number	Meaning
5	Strongly Agree
4	Agree
3	Unsure
2	Disagree
1	Strongly Disagree

Figure 29: Likert scale used on questionnaire survey

The questionnaire was sent out to 150 members of Amec and BAA from the range of management levels. The full responses are provided in Appendix 2.

7.5 Questionnaire Findings

7.5.1 General Findings

When looking at the responses collectively regarding individuals thought there was a documented partnering policy in place, we can see there is a broad range of views, which mean little unless the views of different types of respondents are considered separately.

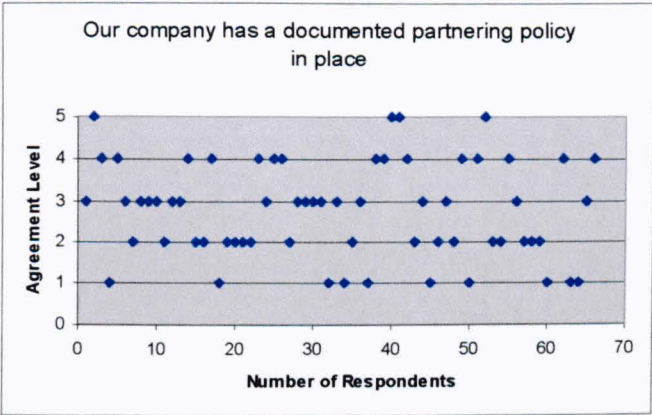


Figure 30: Documented partnering policy

7.5.1.1 Upper Management

It is perhaps prudent to begin with the upper management, as it is they who develop and are responsible for the development of the company partnering policy and who are also ultimately responsible for the strategy utilised when implementing partnering.

17 directors from Amec were asked if their company had a documented partnering policy in place. Only three of the 17 said they agreed, with the majority of respondents disagreeing or strongly disagreeing. Five respondents were unsure.

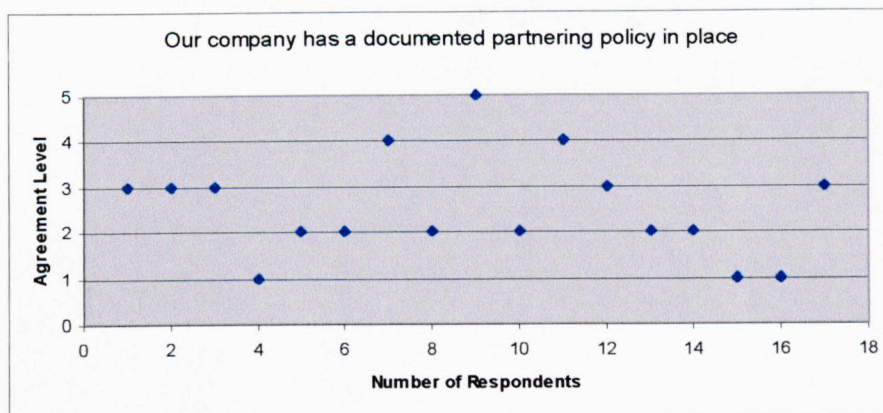


Figure 31: Documented partnering policy

The three who responded positively were from the regional office of Amec that were spearheading the Framework Agreement with BAA. One can surmise that little or no formal partnering *Policy Documents* have been developed for the rest of Amec at this time.

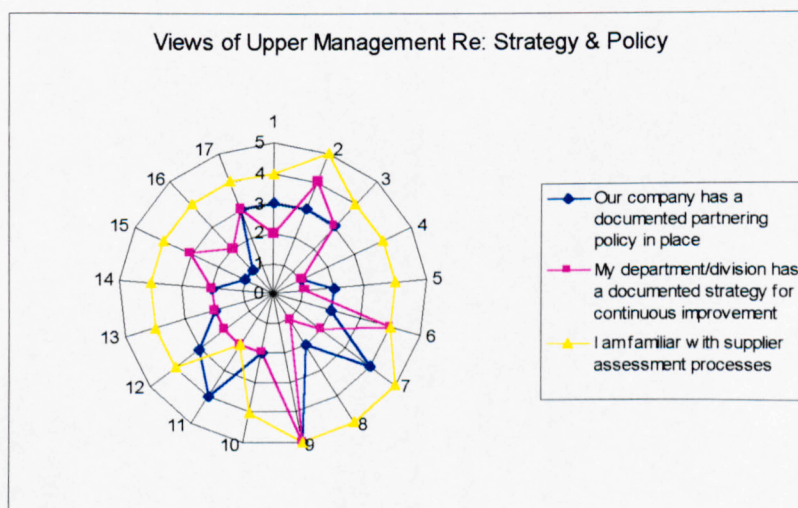


Figure 32: Strategy & policy upper management

The spider diagram in Figure 32 shows that the respondents were generally far more familiar with supplier assessment procedures than with either partnering policies or continuous improvement procedures.

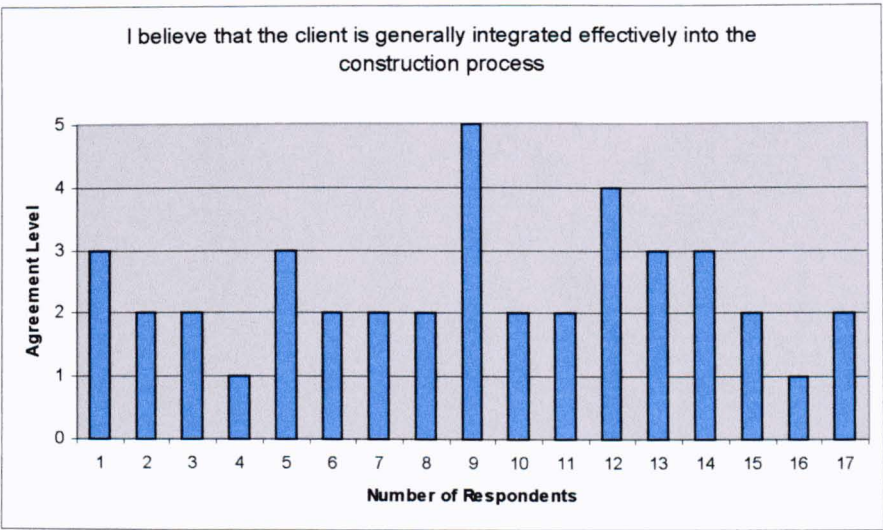


Figure 33: Effectiveness of client integration

Figure 33 illustrates that the majority of respondents believed that clients were not effectively integrated into to the construction process¹¹⁹.

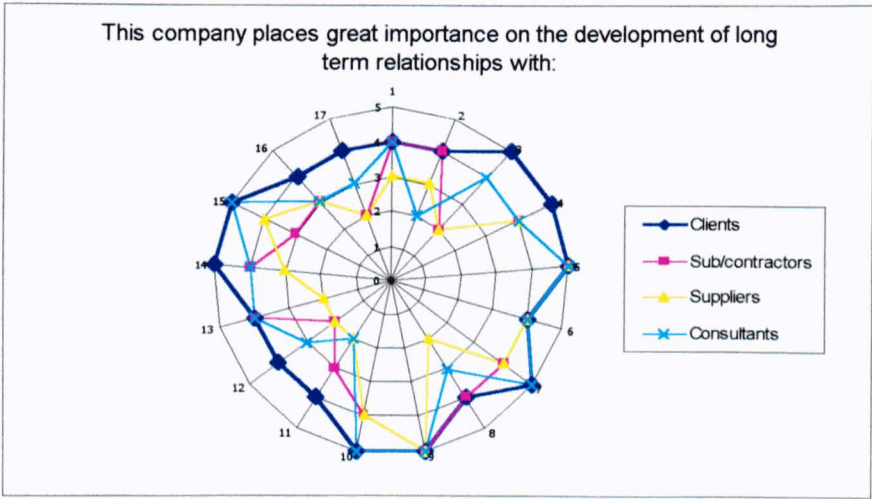


Figure 34: Long term relationships with clients

¹¹⁹ although a local director from Amec Southern felt strongly his clients were integrated effectively

Figure 34 illustrates how the majority of respondents felt that their company placed a strong emphasis on the development of long-term relationships with clients which illustrates that although partnering policies are not in place the desire to develop a partnering culture is there. This is further evidence of this by the responses to the statement “*Partnering is just more bureaucracy*” when all respondents either strongly disagreed or disagreed with the statement.

When investigating the views of upper management in more detail it is revealed that there are strong views regarding the equality of any partnering relationship with the majority believing that there should not be a dominant partner and that equal benefits should be gained by each¹²⁰. Figure 35 illustrates the strength of opinion in each of these areas.

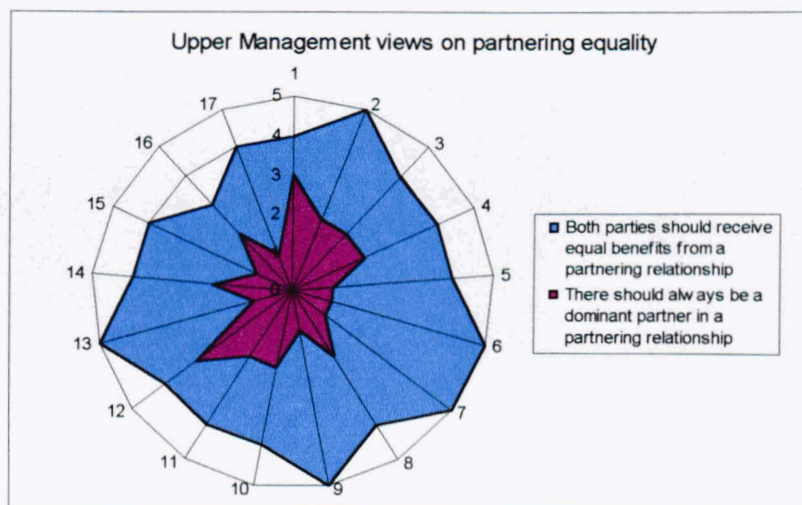


Figure 35: Equality and benefits of partnering

¹²⁰ This is against recommendations from Toyoda and the Automotive Review who recommends that a dominant partner drives the relationship. See Section 2.1.6

One of the potential benefits of partnering is to help promote innovation through CIP. 53% of Upper management felt the environment of their company was conducive to innovation.

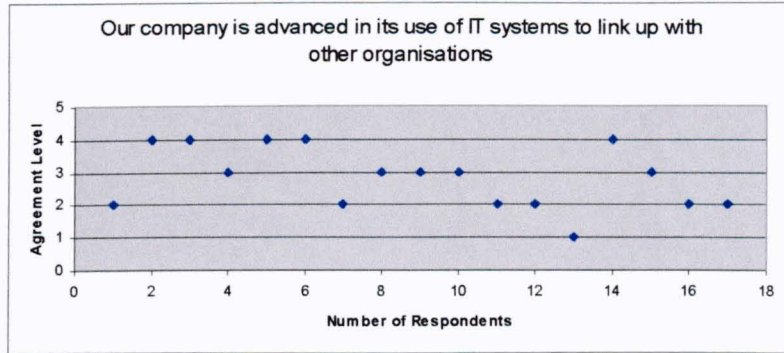


Figure 36: IT use in integrating with organisations

Regarding process issues 53% stated that it is clear who owns particular processes with few disagreeing however only 29% of respondents new whom to speak to regarding process interface issues. Also 59% of upper management believed that senior managers set clear objectives for individual teams however 47% believed that the company did not encourage individuals to take action themselves with only 23% agreeing. Interestingly the majority believed that upper management had too much involvement in decision making as is illustrated by Figure 37.

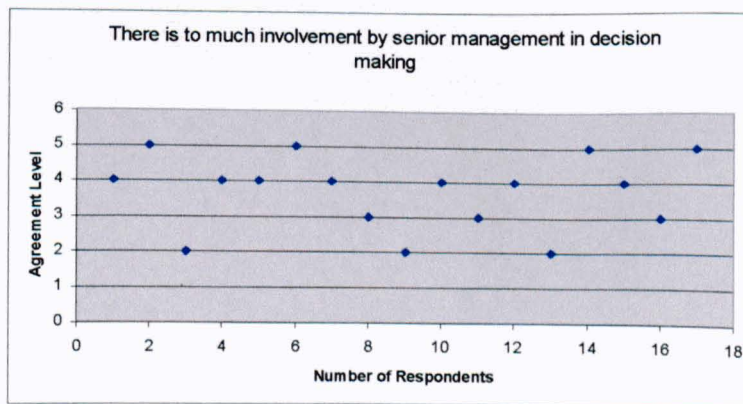


Figure 37: Over involvement in decision-making

Upper management also stated that the culture within their organisations was on the whole open although 41% were unsure, which from upper management is perhaps surprising.

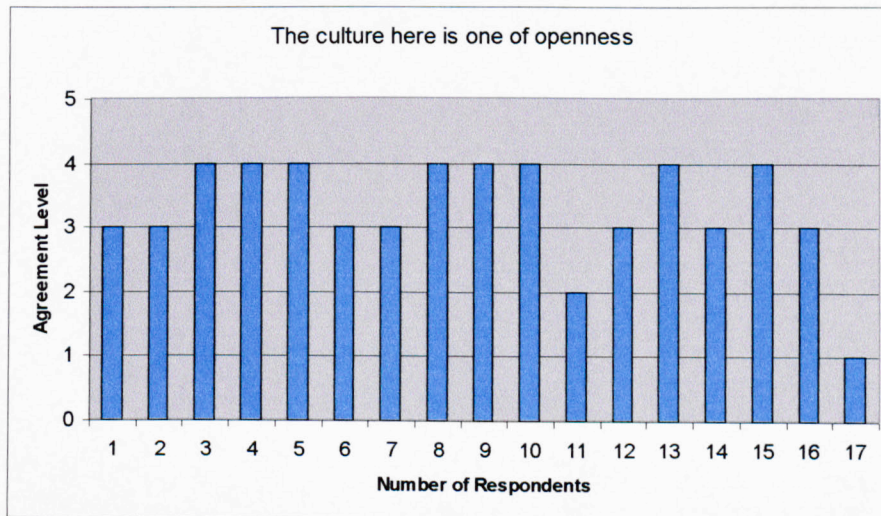


Figure 38: An open culture within respondents company

7.5.1.2 Management level

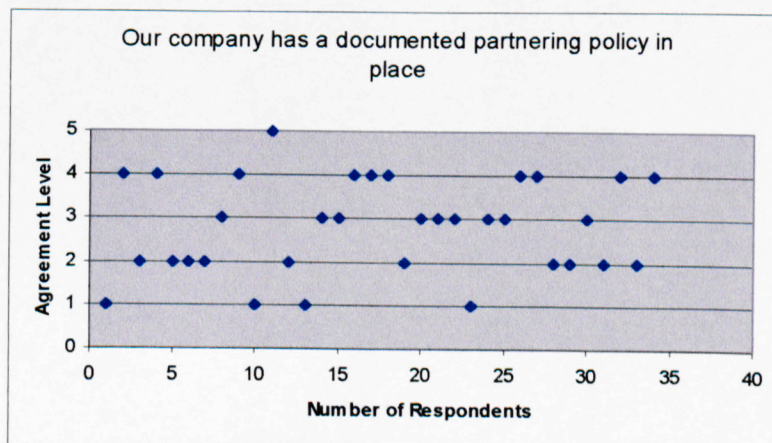


Figure 39: Company policy documents

The collective views of the managers whether they are from design, project management or commercial areas regarding partnering *Policy Documents* shows that proportionally more believed such a company document existed than did the upper managers. The management respondents strongly disagreed with the statement that partnering is just more bureaucracy. However 50% believed that partnering was nothing new which compares with 34% for upper management.

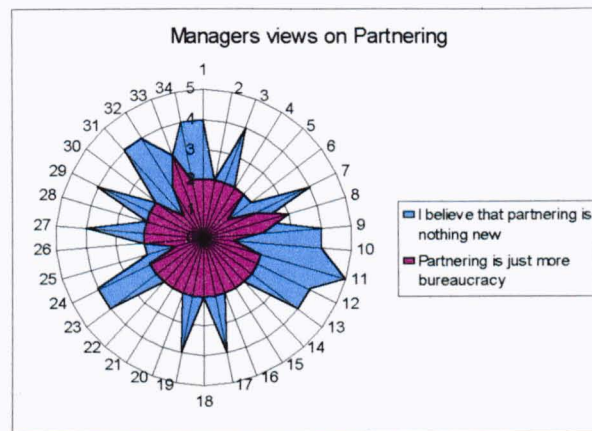


Figure 40: Managers views on partnering

The respondents in this section have more project specific management functions than the upper management level and therefore their responses to questions regarding the performance of other disciplines is of interest.

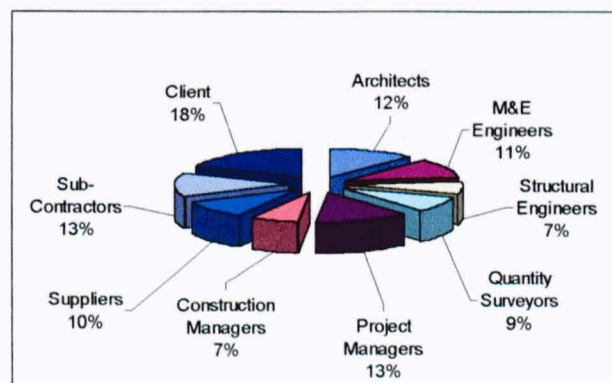


Figure 41: Those not fully aware of their responsibilities

Problems associated with the lack of awareness of responsibilities are quite evenly spread amongst different disciplines however clients were seen not to be fully aware of their responsibilities by 18% of respondents.

29% of respondents believed that it was clear which organisations owned and were responsible for particular processes. Although only 7 respondents disagreed with the statement, a large number (50%) were unsure which suggests there were problems in identifying ownership of particular tasks and activities.

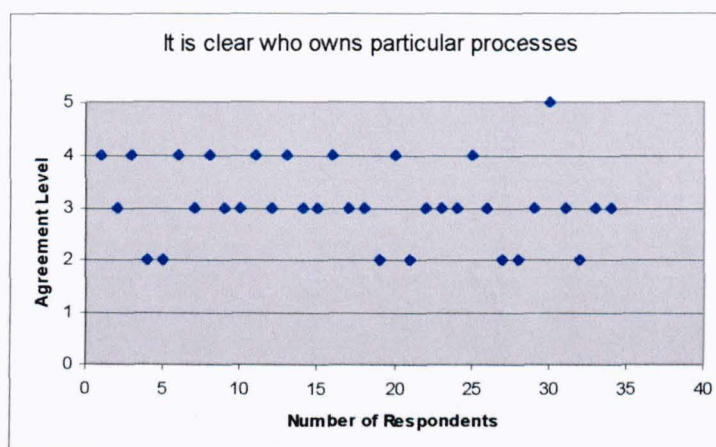


Figure 42: Clear whom owns particular processes

44% of managers disagreed with the statement "*that there is too much involvement by senior management in decision making*". This could be because they believed they were not getting as much support as they would like or simply that the level of involvement was correct according to them.¹²¹

¹²¹ Upper management strongly agreed with the statement.¹²¹

However by far the majority of managers believed that their companies were not advanced in the use of IT to link up and integrate with other companies with only 8% agreeing with this statement.

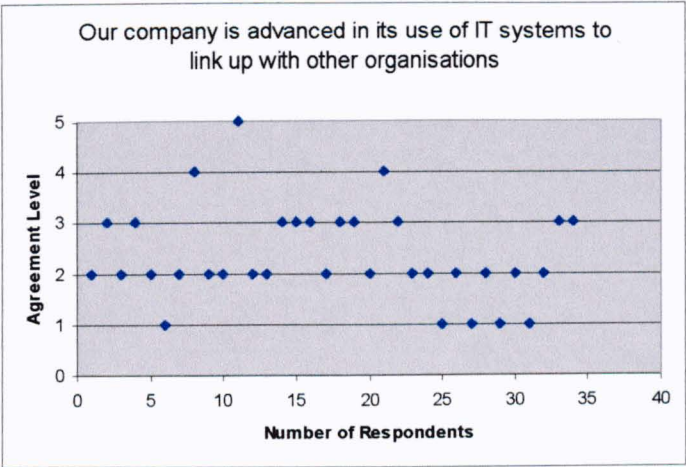


Figure 43: Use of IT to integrate with companies

The majority of companies also did not have formal ways of channelling innovative ideas thorough the organisation with 61% disagreeing with the statement “*There is a forum for employees to table ideas & innovations*”.

This is further reinforced with only 32% of respondents stating they knew whom to approach regarding process interfaces.

The design management team were whom the management respondents thought caused the most delays to project completion. As Figure 44 shows poor design information caused the most problems closely followed by changing client requirements. Disputes between project contributors were also problematical.

The views regarding project delays were very much in accordance with those of upper management.

Regarding innovation 44% of respondents also believed that the environment in their company was conducive to innovation with 29% disagreeing.

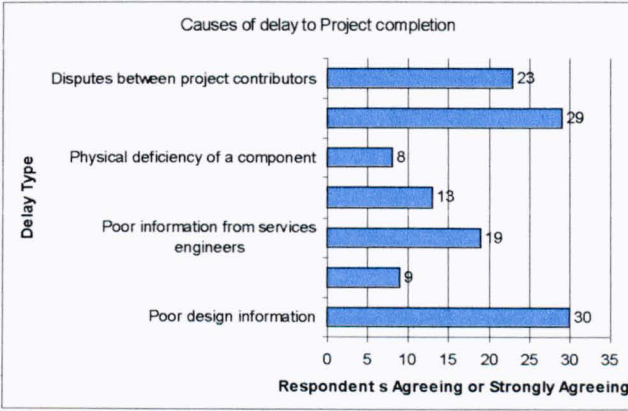


Figure 44: Causes of delays to project completion

7.5.1.3 The Pavement Team

The following section discusses the responses from the pavement team. The team was also interviewed on a one to one basis and the results of these structured interviews will be summarized in the following section.

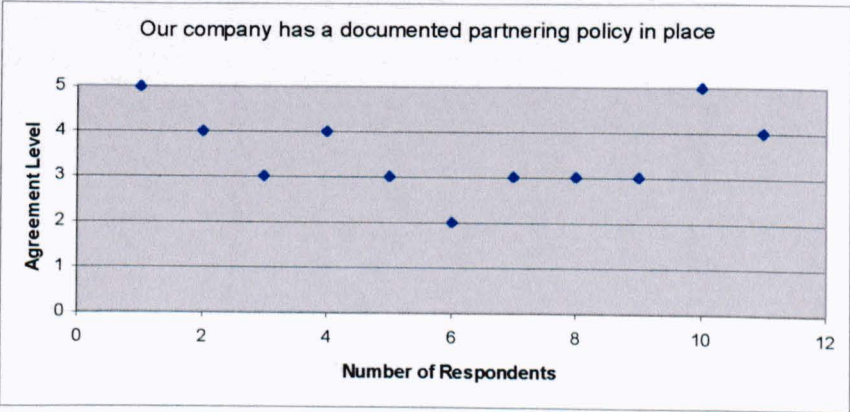


Figure 45: Documented partnering policy

As can be seen from Figure 45 only one respondent believed firmly that a partnering policy was not in place in his company. Two of the team also responded that they were not aware that their department had a documented continuous improvement strategy. Respondents were definitive regarding their answers to whether they thought partnering was nothing new. Five believed it was nothing new and six disagreed with the statement. None of the Pavement Team thought that partnering was simply another layer of bureaucracy and all but one who was unsure said that the partnering relationship provided tangible benefits. 72% however believed that partnering would be abused in the industry with the remaining respondents being unsure.

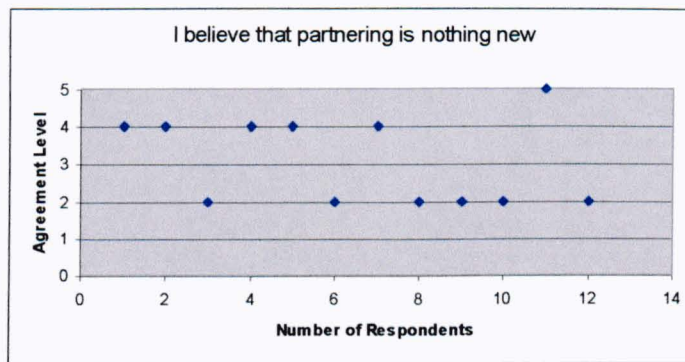


Figure 46: Partnering not new

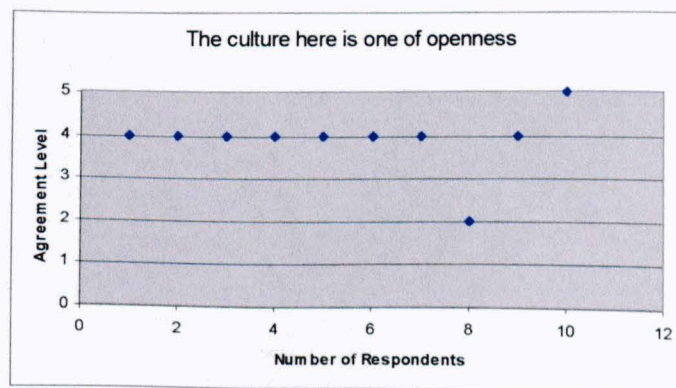


Figure 47: The existence of an open culture

All the team agreed that the culture within the Pavement Team was one of openness apart from one individual from Airport Development who was working in isolation from the team and was in effect signing off their work. Although included in the Pavement Team this function was perhaps a remote element of the team with at times conflicting objectives.

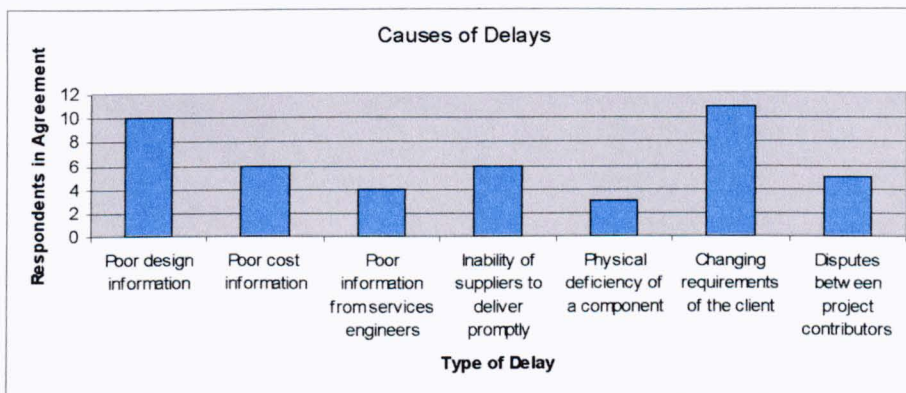


Figure 48: Causes of delays to project completion

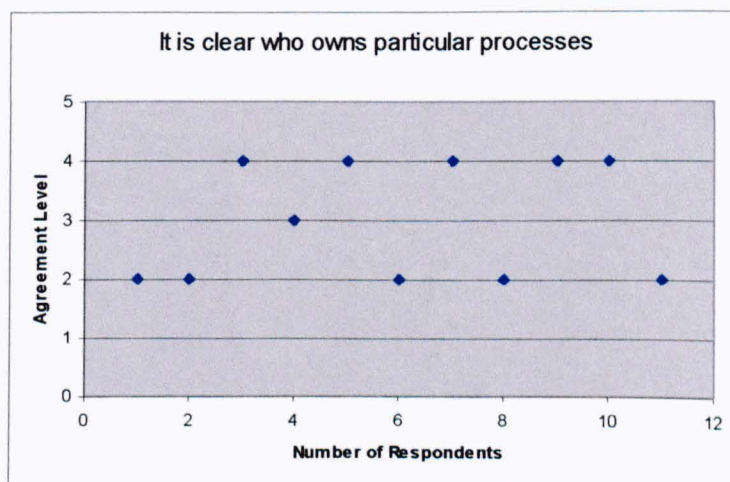


Figure 49: Clear who owns particular processes

The Pavement Team regarded the changing requirements of the client as the main cause of delay followed by poor design information. The changing requirements of the client perhaps tie in with the response from one of the client organizations regarding lack of an open culture.

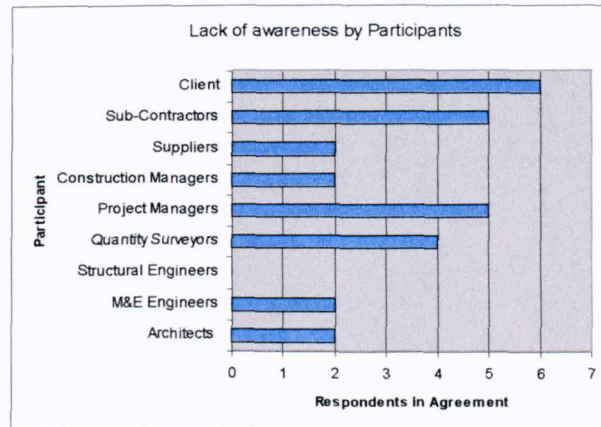


Figure 50: Lack of awareness of responsibilities

There was a split reaction regarding who owns particular processes as illustrated by Figure 49. 45% believed it was clear who to approach regarding process interface issues and the client was most attributed with having a lack of awareness regarding their responsibilities. Sub-contractors and project managers were also seen to have a lack of awareness.

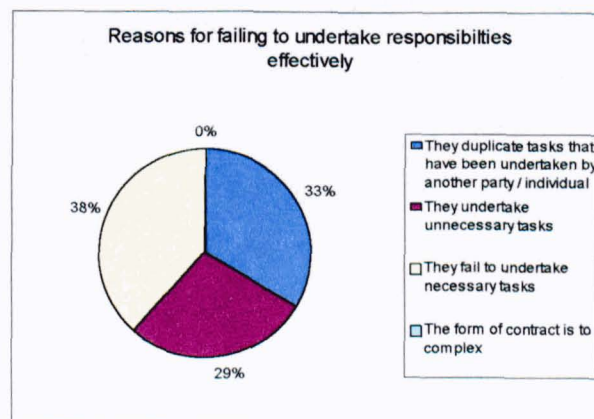


Figure 51: Reasons for not undertaking responsibilities effectively

The respondents believed that the reasons for failing to undertake responsibilities effectively were evenly split between duplication, undertaking unnecessary tasks and failing to undertake necessary tasks.

7.6 Questionnaire Summary

Issues to which there was strong response or view from respondents (at either upper management, senior management or Pavement Team level) to the questionnaire regarding key partnering principles are summarised below. The summaries provide a backdrop prior to the case study discussion in Section 7.7.

Upper Management Views	
1	No perceived <i>Partnering Policy</i> in place for Amec as a whole
2	Directors responsible for Framework state Policy Doc in place
3	More familiar with supplier assessment than CIP
4	Clients generally not effectively integrated into construction process
5	Strong emphasis on developing long term relationships with clients
6	Do not believe partnering is more bureaucracy
7	Partnering should be equal with no dominant partner.
8	Believe their companies not advance in integrated IT
9	Upper management has too much involvement in decision making

Management Level Views	
1	Majority believed the company had a Policy doc (more than Upper)
2	Strongly believed partnering not just more bureaucracy
3	Half believed partnering was nothing new
4	Clients often not fully aware of their responsibilities
5	Believe it is often unclear who owns particular processes
6	Majority didn't think senior managers too involved in decisions

- 7 Most believe their companies not advanced in integrated IT
- 8 Poor process for tabling innovative ideas
- 9 Poor design information causes most delays to projects

Pavement Team Views

- 1 Believe a *Partnering Policy Document* is in place
- 2 Unsure how they fit into *Policy Document*
- 3 Team works on a strong basis of openness
- 4 Client changes cause most disruption to the programme
- 5 Most participants believe there are tangible benefits to partnering
- 6 Believe partnering can be abused in industry
- 7 None believe partnering to be another layer of bureaucracy
- 8 Nearly half believed it was clear who to approach re: process issues
- 9 Don't believe the contract affects ability to undertake tasks

7.7 Case Study Discussion

The questionnaire data captured a broad range of views and experiences from a range of personnel involved in the Framework Agreement as well as senior management from Amec. It has provided a useful snap shot of the partnering arrangement as well as of the views and experiences of staff regarding key aspects of the partnering approach.

This section builds on the questionnaire findings and reports the results of the interviews, which were undertaken with the pavement team, and Amec senior management who had influence or involvement in the Framework Agreement. This section summarises the key findings from the interviews undertaken and discusses the results of the case study in the context of assessing the success of the Framework Agreement, identifying the key partnering principles utilised and areas for improvement. Where appropriate quotations are used from the interviewees, which are referred to the research data provided in Appendix 2.

7.7.1 Important Issues Raised

The team had strong views regarding the greater sense of openness between participants who were fully embracing the partnering with many stating that this more open book approach was clearly evident when comparing the situation with other non-partnering projects. The team also reported better integration with partnering suppliers than they had been used to and believed that these suppliers were more involved in strategic decision-making. There were also considerable improvements in design and production integration between participants even if they were not in the same office.

Senior management stated the importance of both main parties trusting each other and understanding each other's requirements.

“Partnering relies on trust and openness between the parties. Problems need to be faced and solved together. Contractors need to recognise quality, timely completion, and clients need to recognise that contractors have to achieve a profit.” (Regional Director, Amec Northern Division, Ref: Northern, Answer 54)

Many commented that it was important for partnering to be formal.

“Partnering will not work effectively unless there is a formal contractual arrangement between the parties that facilitates partnering and identifies and rewards the efforts. Trust must be demonstrated early in the process.” (Engineering Manager, Amec Major Projects, Ref: Others, Answer 61)

The Framework Agreement represented a more formal approach than most participants had experienced before. It was also quite well administered due to the fact that it had been planned up front. This aspect was considered to be important by several team members.

“Partnering must be developed pre-contract.” (Contract Manager, Amec Piling, ref: Others, Answer 29)

“Partnering is all down to culture and individuals. It needs a good administrative base, reliable reports, otherwise the trust goes.” (Chief Planning Engineer, Amec Southern, Ref: Southern, Answer 49)

The closer relationships with suppliers and a more rigorous selection process led to a much simpler tendering procedure than usual. Amec obtained additional ‘clout’ with suppliers & sub-contractors as companies wanted to be part of the Framework Agreement (which would provide long

term employment to suppliers). This closer and longer-term relationship also enabled research and development activities to be undertaken more effectively.

“Potential to pursue research and development projects both with client and suppliers.”(Senior Materials Engineer, Pavement Team, ref: Pavement Team, Answer 25)

A Simplification of site management processes was evident due to the removal of supervisors and the necessity for man marking as well as the introduction of self-assessment. Although some site personnel expressed concerns over the additional workloads, most staff enjoyed the additional responsibility that the partnering arrangement required of them. Upper management however pointed out the importance all parties performing in order to achieve a real win-win scenario:

“Unless all parties perform well the benefits will not be achieved, and it will be very difficult to get to a truly no blame culture.”(Regional Director, Amec Southern, ref Southern, Answer 56)

Less conflict and confrontation was also clearly evident with many interviewees stating, *“I prefer to work with anyone who is in with the partnering”*. Even if differences of opinion occurred the spirit of co-operation had been successfully instilled within the project team and most participants firmly believed that resolutions to disagreements were achieved more easily than would normally be expected.

“Partnering reduces claims, disputes, and we can concentrate on the actual construction of the project.”(Agent, Amec Marine, ref Others, Answer 37)

The partnering afforded significant savings in the programme with up to 40% being experienced by the team on one particular stand, which had been designed and constructed for BAA after the partnering agreement had been put in place.

The suppliers were also willing to commit to the project more than perhaps is the norm, due to increased job security once they had signed up to the five-year Framework Agreement.

“Job security has improved for Amec employees, producing an improved working environment”(Section Engineer, Pavement Team, ref Pavement Team, Answer 28)

In general the Pavement Team believed partnering is saving money due largely to the following:

- Greater involvement in the construction activities and improved understanding of requirements by other airport sections
- Greater standardisation
- Procedures mapping
- Introduction of CIP procedures
- Issue resolution ladder
- Reductions in invoice queries

Cost savings according to many of the respondents was not due to a reduced tender price however.

‘Partnering does not necessarily give a cheaper tender price, but should lead to a cheaper out-turn cost’(Chief Estimator, Amec Marine Division, ref Answer 32)

7.7.1.1 General views of Sub-contractors and suppliers

The views of the sub-contractors that were formally a part of the partnering arrangement are of great importance as stated by Amec senior management.

‘We cannot expect client to partner with ourselves if we are not willing to do the same with our own S/C and suppliers. We need to change our own macho image. Many clients are not in a position to endorse partnering, particularly in the public sector. ‘(Director, Amec Northern Civil Engineering, ref Northern, Answer 66).

In addition to the comments captured by the questionnaire survey, interviews were conducted with a number of suppliers. A summary of their general feedback follows.

Some of the suppliers reported teething problems at the outset such as a lack of understanding of requirements. It was not clear initially what was expected of some of the suppliers even though the initial workshop had been undertaken rigorously. This was due to many of the key suppliers not being involved at an early stage and too much time & effort being spent

trying to be good partners and not enough getting the job done, according to one site manager.

“A stronger emphasis on team building is required at an early stage.

Partnering would benefit from an active policy to increase staff

involvement through decision making at the lowest possible

level.”(Administrator, Amec Tunnelling, ref Answer 43)

Some suppliers also felt strongly that the profile of the sub-contractors within the partnership needs to be improved and that they should be given more acknowledgements for their achievements. Some were also unhappy that they had not been credited as much as they could have been when main partner organisations were talking to the press about the successes of the Framework Agreement and would have liked greater marketing as part of the team.

There were also problems with a small number of suppliers who were not willing to adopt the non-adversarial partnering approach.

“It reduces certain areas of conflict, although some members try to create

more conflict in other areas. It will only succeed if some peoples attitude

will change.”(Senior QS, Amec Southern, ref Southern, Answer 47)

Certain members of the Pavement Team who were unwilling to adapt to the requirements of the partnering were eventually replaced. This potential problem had been pointed out by one of the Amec directors not associated with the Pavement Team who stated:

“Partnering is a positive way forward to reduce conflict and ineffectiveness in the construction industry. It is based on trust. Some individuals who come from a background of conflicts and are not adaptable will find this approach difficult.” (Director, Amec Piling, ref: Others, Answer 57)

There was also some disagreement between two of the main sub-contractors regarding the partnering arrangement. One believed that partnering is similar to term contracting but with less access to the client and they preferred the term contracting approach. The other however believed that the partnering approach was best because risks were more spread with fewer financial penalties.

All suppliers were keen to impress both the main contractor and BAA.

“We want to do well to preserve our reputations” (ref: Interview notes Appendix 2)

They also felt that long term relationships are required for effective partnering otherwise people won't be fully committed. Confidence and trust in the contractor is crucial due to less direct contact with client. Traditionally such trust in the contractor can be abused and this is one of the main steps suppliers have to take when committing to the Framework Agreement.

Regular meetings and workshops were seen to be crucial to the effective integration of supplier organisation into the partnering strategy and to ensure the smooth day-to-day running of operations.

Although the Framework Agreement was one of the most advanced in operation at the time of study it was still the first time both of the companies had ventured down such a management route and the

agreement was subject to a number of problems. The interviews were very useful in identifying particular benefits and inadequacies from the perspectives of the different stakeholders and these are summarised in the following section.

7.7.2 Perceived Benefits

Based on the feedback from the surveys the main perceived benefits of the Partnering Framework Agreement can be summarised as follows:

7.7.2.1 Time Savings:

Significant time savings at pre-contract stage (tendering and mobilisation) and in contract execution. Table 22 illustrates the time taken to produce contract documentation has reduced down to between 5 and 9 weeks.

Pre-start	Normal	27 Hold	Now
Tender	6wks	22wks	2wks
CPC Approval	3wks		3wks
Mobilisation	4wks+		0-4wks
Total Time	13wks	30wks	5-9wks

Table 22: Time taken to produce contract documentation

Time taken to complete the contracts is better than programmed.

Execution	Contract	Complete
Fuel Farms	31wks	26wks
Stanstead	16wks	13wks
Charlie Stands	26wks	26wks

Table 23: Time taken to complete contract

7.7.2.2 Cost savings

The ultimate aim of the team is to improve efficiency and results prove that the Pavement Team are delivering airfield pavements at 10% less than previously tendered contracts. The team also know there are further savings possible and are confident that the 30% target can be achieved.

7.7.2.3 Few Disputes

Despite initial problems no issues have been raised above the Framework Management Committee level.

7.7.2.4 Value Engineering and design reviews

The team have been involved in value engineering and design reviews on a scale not possible with previous contractors which has enabled technical initiatives that are, or will, contribute to cost savings.

7.7.2.5 Safety and Quality

Safety and Quality levels have been improved. Accident statistics show the teams performance to be much better than the national industry standard and better than the BAA standard and still improving.

7.7.2.6 Specification

The team see a major change to the “*that’s the way we’ve always done it*” attitude and feel that the compulsory adherence to unnecessary specifications is changing to a “*lets specify what we need*” approach.

7.7.2.7 Research and Development

Long-term agreements are allowing Amec to invest in Research and Development with the confidence that a five-year agreement will enable them to benefit from the results, delivering further added value to the company, from the partnering agreement.

7.7.2.8 Design Changes

Although still problems with communication between site and off site staff BAA designers are more flexible and take on buildability comments far more readily now they are a part of a gain share formula.

7.7.2.9 Benchmarking

The team believe that benchmarking has improved overall since the commencement of the arrangement.

7.7.3 Areas for Improvement

One of the most common bits of feedback from the team regarding how the Framework Agreement could be improved was that more people wished to be invited to the initial Pavement Team workshop. Although a partnering facilitator was put in place at the outset, she only dealt with the early formative aspects of the strategy with the senior management and key participants. Some of the key participants who were crucial to the effectiveness of the arrangement were not included however and they believed this caused difficulties in the early stages of the project due to a lack of understanding of the objectives.

The team also believed there was no clear strategy or procedure for partnering established at the outset. The partnering workshop was effective in establishing the mutual objectives for elements of the team who were present but not in how to manage the arrangement.

It was also evident that the partnering was not effective between all of the airport sections such as NATS, operations, maintenance and 'Land/Air'. The team appreciated that security was a key issue, however they thought these sections could be more accommodating to the team especially regarding the issue of passes, which they believed were in some cases

needlessly restricting the time available to undertake actual construction works, due to them being issued late or not at all.

There was also considerable room for improvement regarding the relationship between design team and supply chain. The partnering was being driven from the contractor's side that was focusing on developing close relationships with the suppliers. However some of the design team felt the loyalty of the suppliers rested firmly with the balance of power being the contractor and not with them.

It was reported that there were not enough incentives for staff and that although there were incentives at a higher management level for supply companies, these did not effectively filter down to staff level. Some of the participants stated that they were being asked to contribute more but were unsure what they were getting from it.

“Partnering is a lot of extra work which from a company's view is worth the effort, but from a personal view has had no benefits.” (Principle Engineer, Pavement team, ref Pavement team, Answer 3)

There were also problems associated with the inequity of reward / payment schemes which were considered divisive between Amec & BAA. Some team members who were undertaking similar functions were receiving considerably different salaries. This was considered to be a major problem in creating and maintaining a properly integrated team that consisted of representatives from BAA and Amec working in the same office. There were also problems associated with incompatible procedures from the parent companies such as different end month dates for accounts.

The team also reported that there seemed to be some complacency at the outset perhaps due to an over emphasis on co-operation. The result was the less rigorous use of QA procedures as there was concern that over

checking of work and performance would be seen to be at odds with the partnering approach. This was resolved as the partnering matured and the managers realised the partnering approach needs to be rigorously implemented not purely based on trust and presumptions of capability.

A problem that was revealed in the questionnaires and in the interviews was that roles and responsibilities needed greater definition although the team believed in general that this was progressing over time and as the partnering matured.

The production and construction team felt that the design team were somewhat isolated, as they were not situated on site with the core part of the pavement team. They believed that unnecessary delays and changes were occurring to the design without enough notice. The design team in turn blamed many of these changes on the airport authorities not issuing changes or feedback with enough time to spare. This problem can therefore be traced back to the weaker relationships between the airport side of the partnering arrangement.

There was also poor IT integration between Amec and BAA which was initially surprising considering the framework enabled the team to be far better integrated than normal. It was later revealed that this was due to the airport security measures and very tight IT protocols had to be followed which made it difficult to integrate the respective IT systems of the key partnering organisations.

Some personnel specifically the operational staff who had had a long-term involvement with the airport, prior to the establishment of the Pavement Team, considered some of the changes that were made as part of the partnering agreement to be poor decisions. In particular one of the site managers believed the abolishment of the site briefing sessions to be a mistake as these had been highly successful in ensuring the sub-contractors

were clear what they had to do for the day. The manager was trying to get these re-established at the time of the interview¹²².

After visiting both the site office and the offices situated at the airport that were responsible for the management of the partnering and which housed the design team, there was a feeling of them and us between the two offices¹²³. This was fuelled initially by some of the long-standing site and construction managers who had been resident on site being moved to the airport office with the uptake of the partnering arrangement. This caused some ill feeling by some of those who remained on site and who thought that an unnecessary level of management had been introduced to manage the partnering.

"Partnering is a good way of working, but it seems that a lot of people are doing the same work." (Amec Southern, General Foreman, ref: Southern, Answer 27)

It could also be surmised that the 30% cost reduction was being driven too hard. As some of the team mentioned you cannot save 30% forever and after a time there is a danger that corners will be cut in order to achieve the cost saving required of the continuous improvement policy. Some site managers were worried that there was evidence that the quality of temporary site labour was being eroded in order to save money, which was very much against the spirit of the partnering.

¹²² Nic Yeoman, Production Manager, Pavement Team.

¹²³ Duncan Ovrey, Site Engineer, Earth Works Drainage, Amec, G Dudley, Marketing Manager and Proposals Manager, Amec, Richard Gould, Site Agent, Amec

“Partnering can be viewed as giving sub-contractors the opportunity of carrying out work with little regard to quality. Independent inspection of works may be an answer. We must strive to reinforce our QA”(Section Agent, Amec Tunnelling, ref: Others, Answer 63)

7.7.4 Policy Document Requirements

During the interviews the interviewees were asked a series of questions regarding the views on the company *Policy Document*. The following section summarises what they felt this should contain, as well as what it should avoid.

7.7.4.1 Senior Management

Senior management felt that the *Policy Document* should very much be a framework and should not be set in stone. They believed that a prescriptive document would result in too many prejudices and would be unwieldy especially when changes were required.

“Guidelines on setting up partnership agreement. Suitable standards that can be considered a basis for partnering.”(Regional Director, Amec Northern, ref Northern, Answer 54)

The also stipulated that it should enable the company to clearly explain to the client the intended partnering policy & strategy and should be a framework documented that could be modified to the specific project at hand.

The *Policy Document* should also list the major benefits that all project contributors would be likely to receive as any team member pursuing a win-win scenario would want to know exactly what was in it for them. On

the other hand the document should also list the requirements, which team members and companies would have to fulfil in order to achieve these benefits, and should illustrate that the team must work hard together, in order for the win-win scenario to be achieved.

“Emphasis on partnering demands that each party must appreciate the needs of the others and must change their culture to enable those needs to be met.”(Regional Director, Amec Southern, ref: Southern, Answer 56)

Most stipulated that risk allocation was of great importance.

“A detailed analysis of risk allocation is required” (Local Director, Amec Tunnelling, ref: Others, Answer 59)

They also believed the document should include a statement of board objectives along with guidance on the applicability of partnering in different situations providing examples and sources of further information.

The *Policy Document* according to senior management should also be linked to team building activities.

“An initial team building process is required. Each individual player must know his and others' responsibilities and focus on achieving the common objectives.” (Senior Contract Administrator, Amec Southern, ref: Southern, Answer 44)

The senior management believed that the *Policy Document* would be a very useful marketing tool with which to stand in front of clients. It would illustrate that they had done more than pay lip service to the current

partnering trend and have developed a suitable strategy aimed at delivering benefits to their clients.

7.7.4.2 Operational Management

Operational personnel including senior site management believed strongly that the *Policy Document* needed to show what was expected of them by partnering.

“Clear information that lets people know what is expected of them, and appropriate to the work that is being carried out” (Section Engineer, Pavement Team, ref: Lower, Answer 28)

They also wanted to know what benefits would be afforded to them, what were the objectives and how they would be measured.

“Identify team members objectives and the means by which objectives are to be achieved.” (Chief Estimator, Amec Marine, ref: Other, Answer 32)

The *Policy Document* was also seen as an opportunity to demonstrate to potential partnering team members, a level of commitment.

“Enough information to demonstrate to various parties, including subcontractors, our commitment to the process.” (Contract Manager, Amec Marine, ref Other, Answer 17)

Operational management also discussed the importance of commitment by senior management in ensuring a decent *Policy Document* is put together with the inclusion of all other company departments, disciplines and individuals who might be affected by future partnering arrangements.

"Roles, responsibilities and details of how parties should integrate effectively, QA and CIP Policies. Benchmarking and performance measurement." Design Team Leader, BAA, ref: Answer30)

An interesting trend that appeared when analysing the data from operational management personnel was that many of them wanted specific instructions and guidance notes on what to do. A collection of key information that respondents felt the *Policy Document* should provide is listed below:

- Sample agreements
- Primary objectives of partnering
- Clarification of the degree of openness permitted with other organisations
- A simple clear statement regarding partnering applying in all our projects
- A list of do's and don'ts / examples of projects where partnering works, or doesn't. An explanation of the physiological aspects of the approach
- A measurement system
- Roles and responsibilities of each level of staff
- Where partnering cannot be effective and why
- Method of fully integrating staff/documentation

Some also mentioned that the *Policy Document* could include a modified form of contract with respondents mentioning the following:

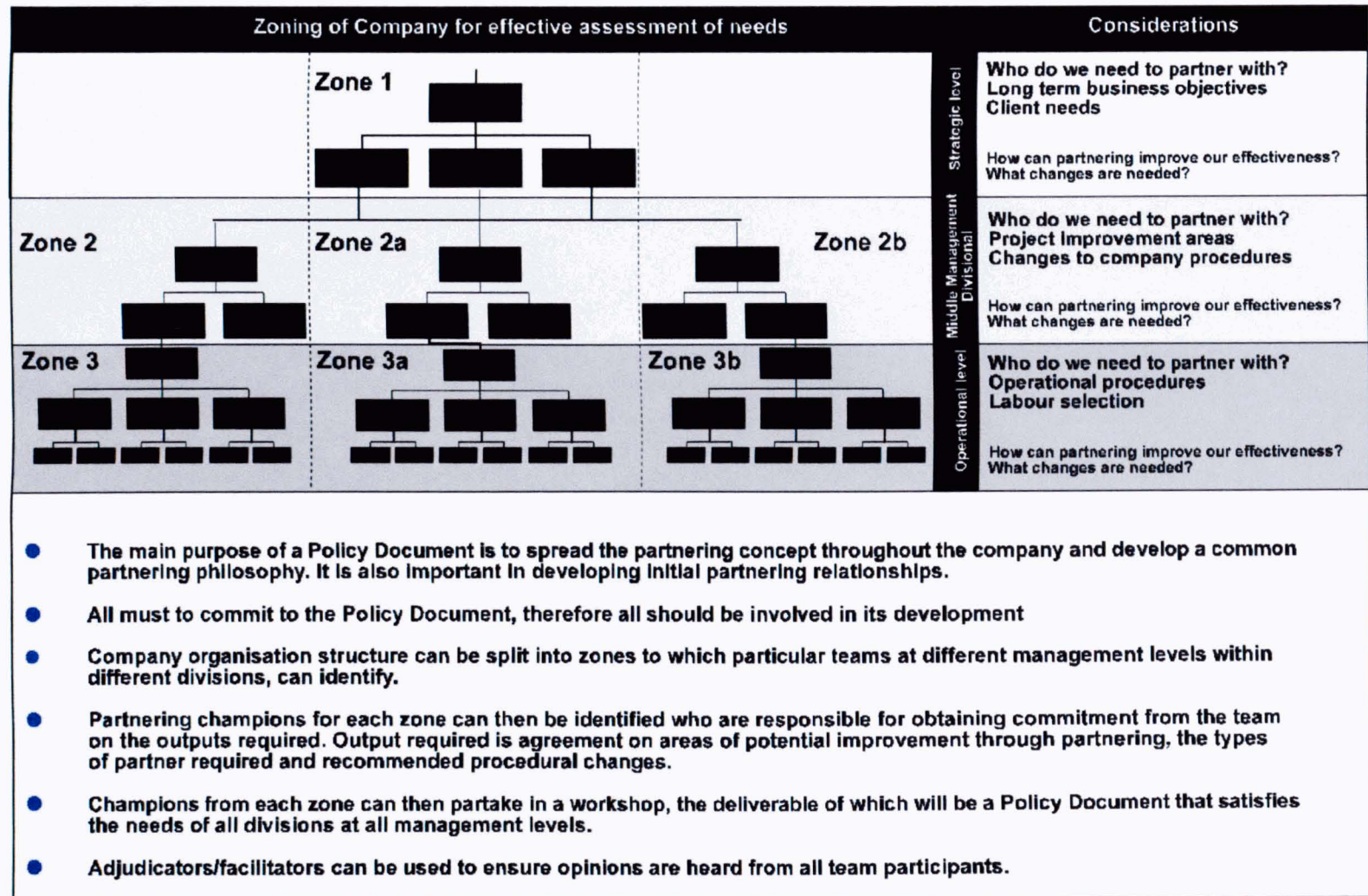
- Brief description of basic *Charter* liabilities would be beneficial.
- A simpler form of contract to be used within Amec companies
- Client's role and responsibilities set out for the contract

7.7.4.3 Subcontractor

The main sub-contractors were also asked what they thought the *Policy Document* should contain and do. The general opinion was that it should be a short-term document to show good faith. Many believed that the document should be for senior management predominantly and they would then drive the partnering and filter down the principles and instructions to the rest of the team. It was also felt that the document should be specific to the particular project and should include all partnering organisations in the proposed agreement. The document should also be specific to the particular term that the subcontractor will be involved in the partnering relationship.

The key considerations that were identified for the contents of the *Policy Document* are represented in Figure 52. It identifies the general criteria that might be considered when developing a company *Policy Document* and proposes it should consider all different levels of an organisation.

Fig 52: Developing a Parttnering *Policy Document*



7.8 Case Study Conclusions

The case study has provided a detailed insight into an existing formal partnering arrangement. It has revealed that the majority of stakeholders and participants have positive views on the partnering and that it is providing benefits to the projects being undertaken by the pavement team. The opportunity to track the project in detail has enabled a set of recommendations on how the partnering can be improved according to the team working with it. This section will briefly summarise the main findings of the case study and then provide a summary of the recommendations for improvement. The case study has also enabled a broad range of disciplines and individuals to be asked what they feel should be contained in a partnering policy document, which is crucial to the effective establishment of a partnering strategy at the front end of a project, and these responses will also be summarised.

7.8.1 General conclusions

Generally by far the majority of respondents believed that partnering was a positive thing and nearly all the respondents from the Pavement Team believed that the approach was having positive effects on the project. Site personnel were however less enthusiastic of the approach than off site management although this disparity had been recognised by management and staff and attempts were being made to involve the site-based operations more in decision making.

Different requirements and views were evident at all company levels and between all project organisations. These different views were largely to do with how the partnering could be improved rather than whether it was working or not. Senior management were emphasising the importance of strategy and of developing formal agreements between principal partnering organisations whereas more operational personnel were concentrating on

how the partnering affected their ability to undertake their specific roles and tasks more efficiently. Generally the integration between upper management and operational functions was far greater than on any other case investigated as part of this thesis, this being attributable to the front end planning that had gone into the development of the Framework Agreement and the experience of those responsible for its implementation at BAA.

All participants whether from upper, middle or operational management emphasised the importance of clarity regarding what individuals and organisations were expected to do as part of their contribution to the partnering and how they should go about achieving these. A senior member of Amec's marketing department¹²⁴ summarised the essentials of partnering with the following key words:

1. Definition
2. Philosophy
3. Responsibilities
4. Mechanisms

The main criticism came from supplier organisations or operational team members that felt these points were not as clearly communicated through to them as they could have been. They felt much of these problems could have been resolved if they had been more included in the initial workshops when the Pavement Team was formed or if they were not involved on the project at the time, a specific workshop to introduce them to these four fundamental principles would have been of benefit.

¹²⁴ G Dudley, Marketing Manager and Proposals Manager, Amec

7.8.2 Policy Document Use & Content

The Results regarding the proposed partnering *Policy Documents* were different with a variety of views on their use and content such as:

1. As a marketing tool
2. A pre-qualification document
3. Requirement of different documents for different clients
4. As an outline guide describing internal partnering philosophy
5. As a detailed guide incorporating procedures and techniques
6. As a set of documents outlining individual responsibilities

The upper management predominantly wanted a document that would help them form a strong and water tight relationship with their main client, enabling objectives to be established and a rigorous *Charter* to be set in stone at the beginning of the relationship. More operational disciplines wanted clear instructions on what they had to do and were less interested in more general guidance on how to nurture relationships. They wanted specific instructions. It is evident from this that a general *Policy Document* developed to satisfy the requirements of senior management will not work if merely passed down to operational disciplines and that the aims and objectives of strategic and operational functions needs to be dealt with individually whilst being a co-ordinated part of the same overall partnering strategy¹²⁵.

¹²⁵ This very much supports the approach taken regarding the operational partnering model and corresponding processes which address both strategic and operational requirements in establishing and implementing effective partnering

It is evident from this case study that individuals want to be able to contribute to the development of the partnering policy within which they are working and this would seem to be of great importance if specific individuals are not to be isolated from the partnering arrangement.

7.9 Summary of findings

This case study has described in detail the recommendations that different individuals and disciplines have provided from their perspectives, in order to make partnering more effective. Individuals have drawn on both their own previous experience of other jobs as well as on their experience of the Framework Agreement initiated by BAA and Amec. The main recommendations for improvements to partnering are listed below

Recommendations	
1	Partnering must be driven from the top
2	Ensure involvement of all relevant organisations
3	Company procedures need to be adapted to partnering
4	Most arguments are about money. Recognise this.
5	The way people are paid is vital. Uniformity
6	Work toward continuity
7	Equality within the team
8	Responsibilities and rewards
9	All company personnel need to be recognised by a <i>Policy Document</i>
10	Personnel at all levels need to be enlightened by a <i>Policy Document</i>
11	Ensure any policy is aimed at improving quality and not simply at reducing cost.
12	Agreement and commitment is required when developing a policy

The case study has revealed that the partnering undertaken between BAA and Amec is one of the most successful encountered during the research for this thesis. Although there were problems encountered¹²⁶ the team identified these and were continually trying to improve, which is very much in tune with the CIP principle of best practice partnering arrangements. The main problems were encountered at the beginning of the agreement when the Pavement Team was initially formed. The principle partners knew they needed to behave differently than normal but were not quite sure what to do. Because they were not following any rigorous partnering process the production of *Policy Documents* for both strategic and operational functions were not put in place. It was also revealed that there were problems with individuals, especially at operational level, not feeling included in the partnering and not being sure what was expected of them.

The key summary points regarding effective implementation procedures and caution points identified through the research are detailed below.

5.2	Effective (Aspects of Partnering which were effectively implemented)
1	A strong belief in partnering by the team
2	A relatively high degree of up front planning by client
3	Project champions in place
4	A long term client partnering strategy (5 years initially)
5	Recognition of the importance of partnering <i>Policy Documents</i>
6	A formal partnering workshop with an experienced facilitator
7	A partnering <i>Charter</i> produced by Client and Main Partner.
8	Identification of clear objectives
9	Personnel moved into same office and a new team (Pavement) developed specifically for the project

¹²⁶ Refer to the Caution Points in this Section

- | | |
|----|---|
| 10 | Formality to approach. Those who refused to buy in to the approach were removed from the partnering team. |
| 11 | Team were seeking continuous improvement |

Caution points identified include:

<i>Caution Points (ineffective aspects)</i>	
1	Method of monitoring the relationship needed to be clearly defined
2	Some participants not included in the new team felt left out
3	Participants of the new Pavement Team were still constrained by their parent company policies such as accounting dates etc.
4	Different pay structures of individuals from different partner companies could cause resentment.
5	Certain key airport departments such as operations and maintenance not included in arrangement
6	Initial workshop not followed through with further interim workshops
7	Partnering objectives clear but how to achieve them was not.
8	BAA had a basic high level partnering approach upfront but Amec did not have a company partnering approach or <i>Policy Document</i>

7.10 Amec Workshop: Review of the Partnering Processes

At a final workshop consisting of Amec senior staff, the Long Term and Project Specific Partnering Processes described by the Partnering Lifecycle¹²⁷ were presented and were reviewed in light of the work undertaken and the lessons learnt. The workshop consisted of 40 senior managers, (many of whom were regional directors) from Amec, who had an involvement in developing Amec's internal company policy.

The delegate's felt strongly that such processes would be of great use in helping to communicate the partnering to the entire team both at strategic level and operation level. They also felt that as they stood they would be of great use as generic templates with which any partnering arrangement could begin to work with. The researcher had proposed 5 key sub *Activities* that in light of the studies undertaken, would be required for each of the stages described by the lifecycle to be undertaken effectively.

The Amec managers reviewed the processes during the workshop in considerable detail. The group were split into teams of four people who were each given one of the stages in the Partnering Process Map to review. Each team had one hour to review the stage inputs and activities. Each team was then asked for their opinions and recommendations regarding the specific stage they had looked at. On the whole the teams were in agreement with the sub activities proposed.¹²⁸

The final sub-activities resulting from the workshop are listed in Table 24 *Strategic Partnering* and Table 25 *Project Specific Partnering* along with Section references.

¹²⁷ Section 6.3

¹²⁸ Many useful comments came out of the workshop and are incorporated into the detailed descriptions for each stage and sub-activity which are presented in Appendix 2

LONG TERM STRATEGIC PARTNERING: ACTIVITIES	
1. Identify Objectives	
Developing an Internal Policy Document	
1	Internal Assessment (4.22)
2	Establish Internal Team (5.4.3.1.1, Table 18, 4.2.5.2)
3	Identify Key Criteria ¹²⁹ (2.1.13, 2.6, 2.3)
4	Identify Need for Change (2.1.9, 2.2.12)
5	Define Policy Document (Fig 52, 5.3.4, 5.5, 6.1.1)
2. Partner Selection	
Choosing the right Partner	
1	Identify Potential Partners (2.2.1, 2.1.3.1, 2.1.9, 6.1.1)
2	Contractors Day Event (4.2.5.2, 4.2.9)
3	Potential Partner Audit (6.1.2)
4	Decide on Partner(s) ¹³⁰
5	Agree Outline Strategy (5.2.13.4, 6.1.3)
3. Developing the Relationship	
Establishing suitable Teams and Methodology	
1	Establish 'LTS' Partnering Team (Fig 22b, 2.2.11, 2.2.16.2, 4.3.3, 5.2.13, 5.4.2.2)
2	Identify Improvement Areas (2.1.7, 2.2.13, 5.2.13.4, 6.13)
3	Plan Projects Strategy ¹³¹ (5.4.4.3, 6.1.1, 6.2)
4	Sign Long Term Charter (2.3.5, 6.1.4.5, 6.2)
5	Begin Construction Projects ¹³²
4. Managing & Monitoring the Relationship	
Continual Assessment and Problem Identification	
1	Obtain Feedback (4.3.3.1, 5.2.12.3, 5.4.3.8.1, Table 18, 6.1.4.9)
2	Identify Problems (2.1.7, 2.2.11, 2.3.6)
3	Problem Resolution (5.5 Point 9, 6.1.4.6, Fig 24)
4	Update QA (6.1.2, 6.1.4, 6.1.4.7.5)
5	Continue Monitoring (2.1.8, 2.2.13, 4.3.3.2, 4.3.6, 5.5, 6.1.2, 6.1.4.7.4, 7.9)
5. Strategy Review	
Review of Overall Partnering Strategy	
1	Assess Charter Success

¹²⁹ Type of relationship, constraints and risks.

¹³⁰ Based on method of assessment undertaken in Point 4

¹³¹ Considering multiple projects and ensuring performance measurement related to long term objectives

¹³² Undertake activities described in Table 25.

2	Assess Improvement Programmes (CIP) (4.2.6, 5.4.4.3, 6.1.4.7)
3	Identify Lessons Learnt (5.1.1, 5.2.11.2, 5.4.4.2, 5.5)
4	Consider Continuation ¹³³
5	Update Partnering Strategy ¹³⁴

Table 24: Break down of proposed Activities for Long Term Strategic Partnering

PROJECT SPECIFIC PARTNERING: ACTIVITIES	
1. Develop Project Strategy	
Identify Project Objectives and Procedures	
1	Select Partner Organisation ¹³⁵ (Fig 23)
2	Identify Project Requirements (4.3.3.3, 4.5.4, 5.2.13.4, 5.3.2.2, 6.1.1)
3	Establish Management Procedures (6.1.4)
4	Identify Suitable Procurement (4.5.2.2, 5.2.4, 5.4.3.5, 5.4.4.3)
5	Agree Upon Project Objectives (2.2.7, 2.2.10, 2.3.6, 2.8.1, 5.2.13.4, 6.1.2)
2. Project Team Selection	
Selection of compatible companies	
1	Identify and brief Organisations (5.3.2.3, Fig 21)
2	Select Design Principle (5.2.6.5, 5.2.12.1, 5.2.13.4)
3	Select Core Consultants (Table 15, 5.3.2.3)
4	Establish Work Package Selection Protocol ¹³⁶ (Fig 21)
5	Select Work Package Organisations ¹³⁷
3. Project Team Building	
Team & Strategy Development	
1	Review and Commit to Project Strategy
2	Determine main Work Package Teams ¹³⁸ (5.2.12.3, 5.3.2.6, 5.4.3.1.3, 6.1.4.1)
3	Develop Work Package Strategy (6.1.4.3)
4	Determine Roles & Responsibilities (4.5.2.8, 5.2.13.4, 5.5)
5	Review & Commit to Work Package Strategy (6.1.4.3, 6.1.4.5)
4. Management & Control	

¹³³ After review of performance

¹³⁴ Return to 1.

¹³⁵ If not part of a Long term Relationship

¹³⁶ Includes selection process and performance measurement as in Ferodo supplier selection

¹³⁷ After assessment

¹³⁸ Select Partnering Champions from WP organisations

Continually check results with objectives	
1	Undertake Performance Reviews ¹³⁹ (5.3.2.10, 5.5)
2	Measure & Define Problems (4.2.6, 4.3.6, 5.5)
3	Organise & Implement Action Plan (5.4.3.4, Fig 24, 6.1.4.6)
4	Incorporate Improvements (Fig 24)
5	Return to Step 1 ¹⁴⁰
5. Review	
Assess Performance and Learn Lessons	
1	Review Project Charter (5.2.11, 6.1.4.5)
2	Review Work Package Charters (5.2.11, 6.1.4.5)
3	Refine Long Term Strategy ¹⁴¹
4	Celebrate Project Completion (5.4.3.2.6)
5	Develop New Project Partners ¹⁴²

Table 25: Break down of proposed Activities for Project Specific Partnering

¹³⁹ Review of Project Partnering performance

¹⁴⁰ Is a continuous process

¹⁴¹ Ensure revisions at project level are compatible with those at strategic level.

¹⁴² Return to step 1

Chapter 8: Discussion

8 Introduction

This Chapter provides an in depth discussion of the research findings and presents the key lessons learnt from the case studies and surveys regarding general criteria for effective partnering, common deficiencies with partnering and proposed methods for overcoming them. The Chapter builds upon the Lifecycle model presented in Section 6.3 and recommends a best practice approach to partnering, resulting from the research. The Chapter concludes by presenting the detailed Long Term Strategic and Project Specific Partnering processes.

The Chapter Map for the discussion Section is illustrated below.

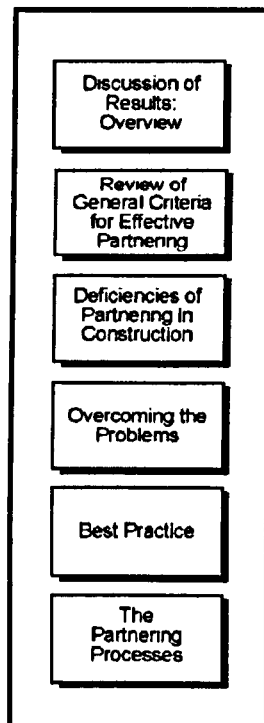


Figure 53: Chapter map for discussion chapter

8.1 Discussion of Results: Overview

From the results of the survey we have seen that partnering in construction is generally being seen to afford benefits by those companies implementing it. The contractor's questionnaire survey revealed that partnering projects compared favourably with non-partnering projects regarding performance, team integration and communication. However more in-depth analysis undertaken through the case studies revealed that there are some fundamental flaws with the development and implementation of partnering arrangements in the UK, including those publicised as 'model' arrangements.

Since the Latham report (Latham, 1994), companies and academia alike have advocated the partnering approach and the research findings suggest that most companies either consider themselves to be Partnering currently or in the process of setting up a policy¹⁴³.

Partnering as a concept might not seem difficult to grasp, however it would seem that practically implementing requires commitment of time and resources in order to develop and operate internal and external partnering strategies. At present this commitment does not seem as widespread as it first appears, and the evidence suggests that partnering in construction, is on the whole, a far less rigorous management approach than in other sectors, for example the automotive industry.

8.2 Review of General Criteria for Effective Partnering

It is a suitable point at which to reflect back to the two general observations, which were noted after the initial review of literature in Section 2.8.1. These proposed that in order for stakeholders to be able to

¹⁴³ With 38 out of 99 respondents in the survey saying they currently partner

improve the performance of the projects by utilising partnering they must undertake two fundamental tasks, these being:

1. To develop and agree a partnering strategy for the project or arrangement prior to its commencement.
2. To communicate this strategy to the project participants and work within its framework in order to achieve the partnering objectives.

The research has revealed the extent to which these tasks were undertaken on the case studies and the results have clearly shown that both are critical factors in the development and implementation of effective partnering in construction. The following sub-section discusses the extent to which these tasks were undertaken on the projects investigated.

Task 1: To develop and agree a partnering strategy for the project or arrangement prior to its commencement.

With reference to task 1 above, in all main case studies there was a distinct lack of definition regarding partnering strategy with the only company to really have a documented strategy in place being Ferodo. Even Amec and BAA when they commenced the 5-year Framework Agreement had no detailed or documented strategy in place and they were very much feeling their way through the early stages. The facilitator who was brought on board helped to develop a team identity but did not help to formulate a clearly defined strategy beyond the formulation of a simple *Charter* and the identification of key objectives for the team. The team reported that this lack of up front planning led to poor performance initially, which steadily improved in tandem with improved

understanding and clarity over the direction of the partnering arrangement.

The ASDA case study revealed that ASDA themselves were clear regarding their aims and objectives of the partnering strategy, however this had not been agreed with the rest of the partnering team. The arrangement was still based on competition and was more one sided than best practice recommends. The suppliers were de-motivated by the lack of openness and were not party to any strategic development, being merely instructed what to do by the client.

The BOVIS projects seemed to implement strategies, which constituted sub components of a partnering approach but not a holistic partnering strategy itself. For example on the London Colney project there was much emphasis on the implementation of the continuous improvement policy described by the Bovis Improvement Initiative (BII). Continuous improvement has been identified as a key component of partnering and its utilisation coupled with a clear determination not to tolerate adversarial behaviour led to performance improvements for the project. However there was a problem in communicating the strategy to the entire team and obtaining their buy in. On this project the initiative was resisted in some areas because the team were not fully included in its strategic development.

The Trafford centre project revealed that there was little formal strategy in place and the partnering was really a state of mind based on 'balance, equity and fairness'.

The M&S Bolton project saw more partnering components being implemented than at Trafford and included more strategic planning than both the other Bovis case studies because the project utilised a new two

stage tender process. They had also developed a long-term relationship with many of their suppliers over the 70-year relationship and much of the team had worked together before. On this project there was more up front strategic planning due to the revised tendering and management approach. However the partnering was not identified as a management approach but was viewed by many as a way of doing things that had been part of the Bovis M&S approach for many years.

Therefore no substantive formal and inclusive partnering strategies were put in place at the front end of the projects investigated and this lack of planning and clarity had negative impacts on project efficiency. Both upper and operational management felt that such strategic planning, based around company specific Partnering policies, was required for the effective implementation of partnering arrangements.

Task 2: To communicate this¹⁴⁴ strategy to the project participants and work within its framework in order to achieve the partnering objectives.

This is largely dependent on how effectively defined the partnering strategy is. Although there were no full partnering strategies developed there were sub components such as improvement initiatives and new construction management procedures and approaches¹⁴⁵. The effectiveness with which these were communicated between both internal staff and other project disciplines, varied among the cases.

At Ferodo, communication was regarded as a critical aspect to the effective implementation of the partnering policy and was undertaken relatively effectively. This was due largely to them placing much

¹⁴⁴ The Partnering Strategy

¹⁴⁵ Such as the two stage tendering used in the M&S Bolton case

emphasis on training internal staff and changing the culture of the company before collaborative techniques were tried. However, the communication and partnering in general was less effective with organisations further up the supply chain such as first tier suppliers and OEMS, although they still worked in accordance with the agreed policy.

The communication at ASDA was very one directional with specific instructions coming from the client. All contractors interviewed, believed that the potential for sharing information was not being used effectively. There was a lack of trust, with the result that the partnering contractors were continually protecting their own interests by withholding information from the other partners even though some most felt that the sharing of information would better equip them to resist external competition. This poor communication effectively stifled the partnering approach on the project.

The communication between Amec and BAA was significantly improved after the formation of the Pavement Team and although a complete partnering strategy was not put in place at the outset, there was great effort to ensure the components of the partnering approach were agreed and communicated with participants. The problems experienced at the outset with operational teams feeling left outside the partnering (not being at workshop, etc) were addressed progressively. The importance of developing both the high level strategy and its specific components and then communicating it to respective parts of the organisation had been recognised. This is evident through their approach to developing the *Partnering Policy Document*, where all key personnel believed that there should be a variety of different policies, tailored specifically for each management level, and which cater for their specific requirements of partnering and which stipulate what is required of them by the partnering.

Although as in all Bovis cases a partnering specific policy or strategy was not put in place, the highly developed personal networks that existed between the project team and supply chain on the M&S Bolton project helped facilitate an effective communication system and helped ensure new procedures were discussed prior to implementation.

The relationship between Northern Foods and Bovis on the London Colney project was not a rigorous partnering approach and there were problems with the team gelling. The participants recognised that partnering should involve both main partners establishing an effective communication network and if this can be improved by the selection of different teams then it should be considered up front.

Trafford had good team integration and effective communication between strategic and operational functions. The client wanted balance equity and fairness and although these were not formally mapped out in any strategy, the effective integration between management levels enabled these principles to be passed around the huge team, which in turn helped to create a more co-operative culture, if not a more open one. This case illustrates how important effective team integration is in enabling effective communication and consequently more effective partnering.

The case study results therefore generally support the hypotheses that for effective partnering, a planned strategy needs to be established early on in the project process and then communicated effectively amongst the existing and future project team members.

The case studies and questionnaires also revealed a range of deficiencies in partnering when comparing partnering in the construction industry to best practice partnering from other industries. These deficiencies will be discussed in the next sub-section.

8.3 Deficiencies of Partnering in Construction

There are perhaps various reasons why partnering in construction, is on the whole, a far less rigorous management approach than in other sectors. Short term projects, with temporary teams who have varied objectives as well as a unique one off product, mean that exchange of information and resources is a complex affair with the potential for numerous conflicts as described in the conflict section of the literature review section. As has been revealed by the case studies, the general trend to commence design and construction work as quickly as possible is often at the expense of a clear project strategy being established up front.

Furthermore the general lack of continuity of work makes it difficult for companies to keep dedicated teams in place for specific partners and difficult to implement any long-term strategy. Also, variable geographic locations can restrict the use of partnering suppliers or sub-contractors if located elsewhere. The result of this is that the majority of companies surveyed who said they were partnering, have not significantly altered their management procedures, their roles or their organisational structures, in order to embrace partnering. Hence facilitation for the effective development of internal partnering policy's or implementation of external partnering strategies and agreements is often unsatisfactory. In contrast, effective partnering in manufacturing requires significant changes in roles and responsibilities especially for supplier organisations that are responsible for warranty of the component they produce as well as for the management of their suppliers. In true 'Japanese' partnering arrangements, main partners actively support their supplier partners¹⁴⁶, to ensure compatibility and competence. There is little evidence of such rigorous supply chain partnering occurring in UK construction partnering arrangements at present.

¹⁴⁶ After rigorous selection procedures have been undertaken

The research findings have revealed some fundamental deficiencies of partnering (or perceived partnering) arrangements¹⁴⁷. Further analysis of the main causes of these shortcomings will help identify potential improvement areas in partnering practice.

8.3.1 Shortcomings with Partnering

The main shortfalls of UK partnering as revealed by the research can be summarised as follows:

- A lack of awareness of roles and responsibilities and confusion as to what partnering entails for the individual¹⁴⁸
- Partnering not being effectively passed up or down the supply chain¹⁴⁹
- Partnering is often driven purely by the pursuit of cost reduction which can introduce a short term view, overly focused on quick returns¹⁵⁰
- Not all the required organisations are included in the agreement/arrangement
- Inequality frequently exists between Partners¹⁵¹
- Managers often have conflicting objectives of partnering with operational personnel¹⁵²

¹⁴⁷ Please refer to Caution Points Tables in the Case study summaries.

¹⁴⁸ (Contractors questionnaire Caution Points 4& 6, Bovis Case 2 Caution Point 5.

¹⁴⁹ (Ferodo Case Caution Point 1.

¹⁵⁰ II Group Case Caution Point 3.

¹⁵¹ Ferodo Caution Point 3.

¹⁵² Bovis Case 1 Caution Point 6.

- Conflict often exists between personnel from different partner organisations especially when placed in physical teams¹⁵³
- Poor inter or intra-organisational communication is highly evident¹⁵⁴
- Poor integration of Information Technology¹⁵⁵
- Changing client requirements still a problem on partnering projects¹⁵⁶
- Poor supplier delivery still a problem on partnering projects¹⁵⁷
- A lack of partnering documentation¹⁵⁸

8.3.1.1 Reasons for Shortcomings

- Poorly defined partnering performance measurement procedures¹⁵⁹
- A lack of formality in partnering arrangements with a common view that it is only about gentlemen's agreements and personal relationships¹⁶⁰
- A lack of long term arrangements, not developed prior to the project¹⁶¹

¹⁵³ Bovis Case 1 Caution Point 2, FI Group Case Caution Point 1

¹⁵⁴ FI Group Case Caution Point 4

¹⁵⁵ Contractor Questionnaire Caution Point 3

¹⁵⁶ Contractor Questionnaire Caution Point 1

¹⁵⁷ Contractor Questionnaire Caution Point 1, Bovis Case 2 Caution Point 6.

¹⁵⁸ Bovis Case 3 Caution Point 2.

¹⁵⁹ Evident in all Construction Case Studies

¹⁶⁰ This informality of partnering agreements was especially evident in the Bovis Cases.

¹⁶¹ Bovis long-term strategy was based around a QMS not a partnering strategy. Amec did not have a LTS prior to entering into the Framework Agreement with BAA (hence their requirement for a policy document).

- Partnering being considered as an independent part of business strategy and not an integrated component¹⁶²
- A feeling that costs are being driven down too hard (30% saving often the be all and end all which jeopardises quality)¹⁶³
- Senior managers regarding partnering as useful in interfacing with the client but not necessarily requiring any process changes¹⁶⁴
- Not all senior managers are convinced prior to partnering commencing and it is consequently not driven effectively¹⁶⁵
- Workshops exclusively for senior management (OK if at appropriate level)¹⁶⁶
- Lack of formal team building makes it difficult to champion partnering¹⁶⁷
- Selection and assessment procedures not being rigorously developed (to suit partnering) or implemented at an early stage.¹⁶⁸

¹⁶² Ferodo best example of strategy being considered as an integrated component, being driven by the client (OEM).

¹⁶³ A concern by both Ferodo and Amec project participants.

¹⁶⁴ Problem expressed by Amec managers and also Bovis management personnel who were responsible for project delivery.

¹⁶⁵ The lack of training and company partnering policies meant real partnering champions often did not exist on the projects at all.

¹⁶⁶ Clearly evident in the Amec case study.

¹⁶⁷ Although team-building activities did take place they rarely corresponded to defined partnering teams.

¹⁶⁸ The lack of strategic partnering selection often resulted in incompatibilities or at east partners who required considerable education in partnering procedures and its aims.

8.4 Overcoming the Problems

Many of the problems encountered can be seen to stem from the findings that partnering is not being regarded as a rigorous management approach but more of an attitudinal issue of open communication, trust and conflict resolution. Although these aspects are vital criteria in any partnering arrangement they are not enough on their own. Effective Partnering in other sectors attempts to improve the performance of processes by improving the quality of information and decision making at all levels, from strategic planning, design, and production management, down to factory floor fabrication. This is undertaken through the development of an initial clear strategy, ideally with long term partners, leading to a more rigorous and tailored selection procedure, and the re-use of trained suppliers and consultants who understand the partnering approach. This results in better teamwork with participants who possess greater understanding of the project requirements and the needs of other participants. Such an approach will impact upon most project management criteria, and many procedures and methods will require frequent review and modification if continuous improvement is to be achieved.

Partnering therefore needs to be driven at all levels in order for its principles to reach all project participants to the required degree. If a partnering arrangement does not invoke any change to project procedure and strategy then it is unlikely that any significant benefits will result from its use. The time and resources that this takes is why the greatest results can be obtained from Long Term Strategic Partnering. Most respondents in the studies were not partnering long term and there was normally no formalised agreement or strategy in place.

The root cause of many of the shortcomings of partnering revealed by the research is the complexity in integrating different teams from different

companies. In other industry sectors many long-term partnering arrangements involve exchanging personnel and although this was undertaken in the FI and Amec cases there is less evidence of this occurring successfully in the other case studies¹⁶⁹.

8.4.1 Inclusion of Key Organisations / Departments

Any effective project management system should consider who and what is required to undertake particular project functions effectively. When developing a partnering arrangement it is vital that relevant organisations¹⁷⁰ are adequately embraced by the partnering arrangement. Figure 54 illustrates an arrangement that does not involve key internal departments A, B and C. Although the partnering arrangement in such a situation can be rigorously developed between the two main partners, its effectiveness can be seriously hindered if there is not a well-briefed internal partnering team to support it. This is especially relevant on large-scale projects¹⁷¹.

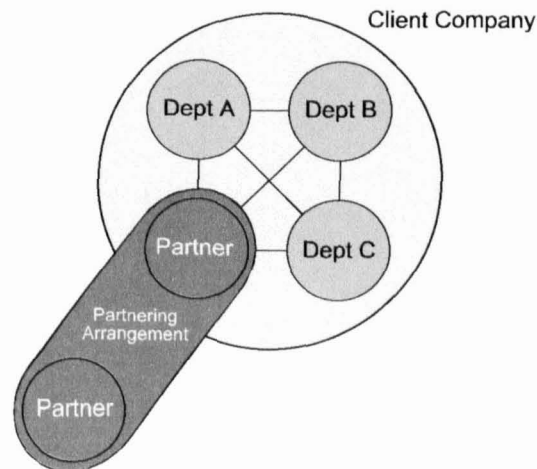


Figure 54: Involvement of key internal teams in partnering arrangement

¹⁶⁹ Although as the FI mini case study reveals this is achievable.

¹⁷⁰ Who will have some input into a required project process or function

¹⁷¹ This scenario was exemplified in the Amec/BAA case when key departments from the Airport were left outside the Framework Agreement, such as the security department.

As the FI case study has illustrated, it is important for the client-partnering department to obtain sufficient input from other internal departments and to ensure appropriate representatives are involved at meetings and brainstorming sessions.

8.4.2 Defragging the Project Team

Partnering at all levels requires effective teamwork¹⁷². Teams need to record actions, progress and performance so that continuous improvement can occur effectively. Teams, for which all partnering members can be clearly identified within the same company, should in theory be able to benchmark themselves quite successfully if an *internal partnering policy* has been developed for that company, coupled with an effective CIP procedure¹⁷³. They should be able to identify with each other culturally, and share a common understanding of the working intricacies of that company, as well as have a mutual allegiance to the company and its long-term aims. Figure 55 illustrates the advantages of establishing an internal partnering policy. If such a policy is effectively developed and implemented, then internal teams or departments should be better integrated and all internal teams involved will better understand partnering goals and procedures. Consequently dealings with external partnering teams or organisations will be more manageable. The benefits of such an arrangement can be seen in the FI Group case study where numerous teams were successfully working under the direction of a partnering policy. The FI Group regularly exchanged personnel as part of their partnering arrangements.

¹⁷² As repeatedly mentioned in the Literature review e.g. Freeman (1991), NEC Contract, etc.

¹⁷³ As illustrated by Ferodo who were required to benchmark and undertake CIP as part of their partnering agreement.

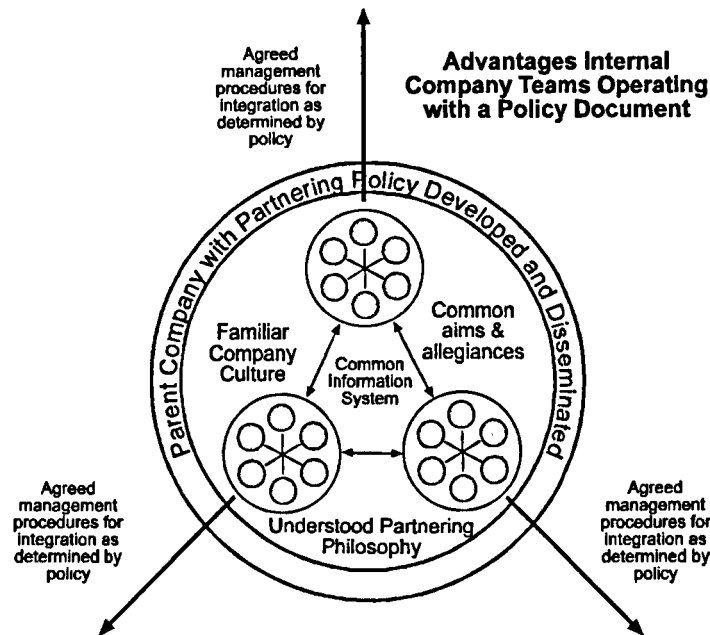


Figure 55: Effective communication between internal and external teams afforded by the use of an Internal Policy Document

The suggestion that an *internal partnering policy* will be of great use for a company over the long term is clear from the statements made by key respondents¹⁷⁴, however the critical teams that are required to be developed on a project basis will often not be from the same parent company. Indeed the exact opposite of the scenario in Figure 55 is normally the case in construction. If the project organisation is left to develop in an ad-hoc manner (and the research suggests this is the norm), then it is suggested that only teams developed will have differing cultures and attitudes depending on the level of the team and the disciplines involved. Partnering is seeking to break down barriers and develop teams with compatible cultures consisting of personnel who are sympathetic to the needs and requirements of other participants. This is not a simple process when dealing with personnel from different and unfamiliar

¹⁷⁴ See case study notes, Amec/BAA

organisations especially as critical participants will continually come and go throughout the project program.

8.5 Best Practice

In order for these problems to be overcome there is a need for partnering to be more rigorously developed at the outset. Partnering strategies for specific projects need to effectively integrate teams by developing an effective *partnering culture*, to utilise the knowledge and experience of partners and continually improve performance. Whether it is for a long-term agreement or a short-term project, a strategy needs to be developed along with appropriate procedures and techniques to best cope with the specific demands and objectives, within the particular constraints imposed by the project or series of projects. The research has identified in detail a range of best practice management procedures that have been effective in enabling different aspects of partnering to occur, which were presented in Chapter 6.

The key partnering principles outline the basic requirements for establishing and operating an effective partnering arrangement. The Lifecycle model provides a recommended framework for successful partnering implementation based on the key principles and procedures identified by the research.

The following section builds upon this framework to develop a more rigorous set of processes, which incorporate the activities defined by the Amec case and provide a set of key inputs for each of the stages in the lifecycle model. The section also provides more detail regarding the recommended teams that should be established for successful partnering thorough out the *Partnering Chain*.

8.5.1 Key Inputs

Based on the research findings and the resultant key principles identified, the following key inputs are recommended to be utilised in each stage, in order to undertake the Activities defined in Section 7.10.

The key inputs (i.e. resources consisting of information or people, etc), which the researcher recommends is required for each stage in the development and implementation of a Long Term Partnering strategy, are as follows:

LONG TERM STRATEGIC PARTNERING: INPUTS	
1. Identify Objectives	
Developing an Internal Policy Document	
1	A set of business objectives
2	Committed staff with identified partnering champions
3	An assessment of project type and difficulties expected
4	Required cultural changes & changes in procedure
5	Clearly defined set of aims and objectives, incentives and rewards
2. Partner Selection	
Choosing the right Partner	
1	Set of recommended potential partners
2	Policy Document in place with defined selection procedures
3	Data with which to undertake Partner audit
4	Clear decision making process in place (from policy doc)
5	Agreed set of goals, visions and expectations with Long Term Partner
3. Developing the Relationship	
Establishing suitable Teams and Methodology	
1	Suitable mix of client and contractor ¹⁷⁵ staff
2	Input of external consultants when considering performance/CIP areas
3	Agreed set of business drivers, responsibilities & management tools
4	Commitment to partnership at all levels and all parties
5	Workshop/ Formal start-up event for the arrangement (initiative)
4. Managing & Monitoring the Relationship	

¹⁷⁵ Assuming a Contractor is the main client partner.

Continual assessment and Problem Identification	
1	Performance data and feedback reports on progress from Champions
2	Review of progress and clear identification of problems
3	Clearly defined action plan for resolution and the right team in place
4	Clearly defined procedure for validating that the problem is resolved
5	Set of lessons learnt which can be logged for future reference
5. Strategy Review	
Review of Overall Partnering Strategy	
1	Data from team reviews re: progress vs. objectives and relationship
2	Summary data from projects re: project success and CIP performance
3	Set of proposals for improvement
4	Review of the Policy Document & incentives if continuing
5	Revised set of expectations for new arrangement

Table 26: Break down of proposed Inputs for Long Term Strategic Partnering

The key inputs, which the researcher recommends is required for each stage in the development and implementation of a Project Specific Partnering agreement, are as follows:

PROJECT SPECIFIC PARTNERING: INPUTS	
1. Develop Project Strategy	
Identify Project Objectives and Procedures	
1	List of project facets, type etc and specific requirements
2	List of project requirements & policy doc objectives if available ¹⁷⁶
3	Partner info re: management procedures
4	Time, cost, quality requirements for choice of procurement
5	Mission statement, incentives and rewards
2. Project Team Selection	
Selection of compatible companies	
1	Company reputation & compatibility with LT strategy (if in place)
2	Set of design risks/requirements for selection of design consultant.
3	Company data & Reputation for selection of core consultants
4	LTS strategy & project specifics for establishing WP selection protocol

¹⁷⁶ If working within a long term arrangement

5	Completed Selection process prior to WP tenders.
3. Project Team Building	
Team & Strategy Development	
1	Project strategy requires Project Charter and risks allocated
2	CIP aims and package champion required for each specific package
3	Management team and WP team required to develop WP strategy
4	Roles & responsibilities agreed by WP team & project partnering team
5	WP team need to agree to strategy (a WP Charter can be used)
4. Management & Control	
Continually check results with objectives	
1	Feedback reports on progress from Champions/ independent assessor
2	Performance data for measuring and defining problems
3	Specific teams for addressing problems/ proposing solutions
4	Set of revisions to partnering strategy for improved QA/CIP
5	Frequent review reports for continual improvement
5. Review	
Assess Performance and Learn Lessons	
1	An assessment of project Charter objectives vs. results
2	An assessment of work package Charter objectives vs. results
3	Set of improvement criteria to refine/improve long term strategy ¹⁷⁷
4	All partnering teams to be invited to celebrate success and completion
5	Efficient suppliers/ subs can be approached as potential LT partners

Table 27: Break down of proposed Inputs for Project Specific Partnering

8.5.2 The Partnering Chain

As has been continually illustrated throughout the research the teams that manage, monitor and champion partnering throughout the partnering term and throughout the *Partnering Chain*, are crucial to the success of the partnering arrangement. It is clear that specific teams need to be responsible for specific aspects of the arrangement as discussed in Chapter 2 and demonstrated in the case studies. Many of the cases under investigation have been with Client and Contractor as main partners.

¹⁷⁷ If a Long Term Strategy is in place.

Figure 56 illustrates how different teams, can be of use in managing different aspects of a Client-Contractor partnering arrangement and shows how a long-term strategy can be communicated throughout a project. The chain illustrates the importance in developing an appropriate partnering culture at each stage in a partnering arrangement. A range of participants come and go on a project and it is vital for a partnering arrangement to recognise that each needs to become a part of a specific team as and when they arrive on a project, which enables them to be briefed on and be associated with, a specific part of the overall partnering strategy, quickly and efficiently. The ease and clarity with which new participants are briefed is important if partnering is not to be seen as a bureaucratic and additional management function.

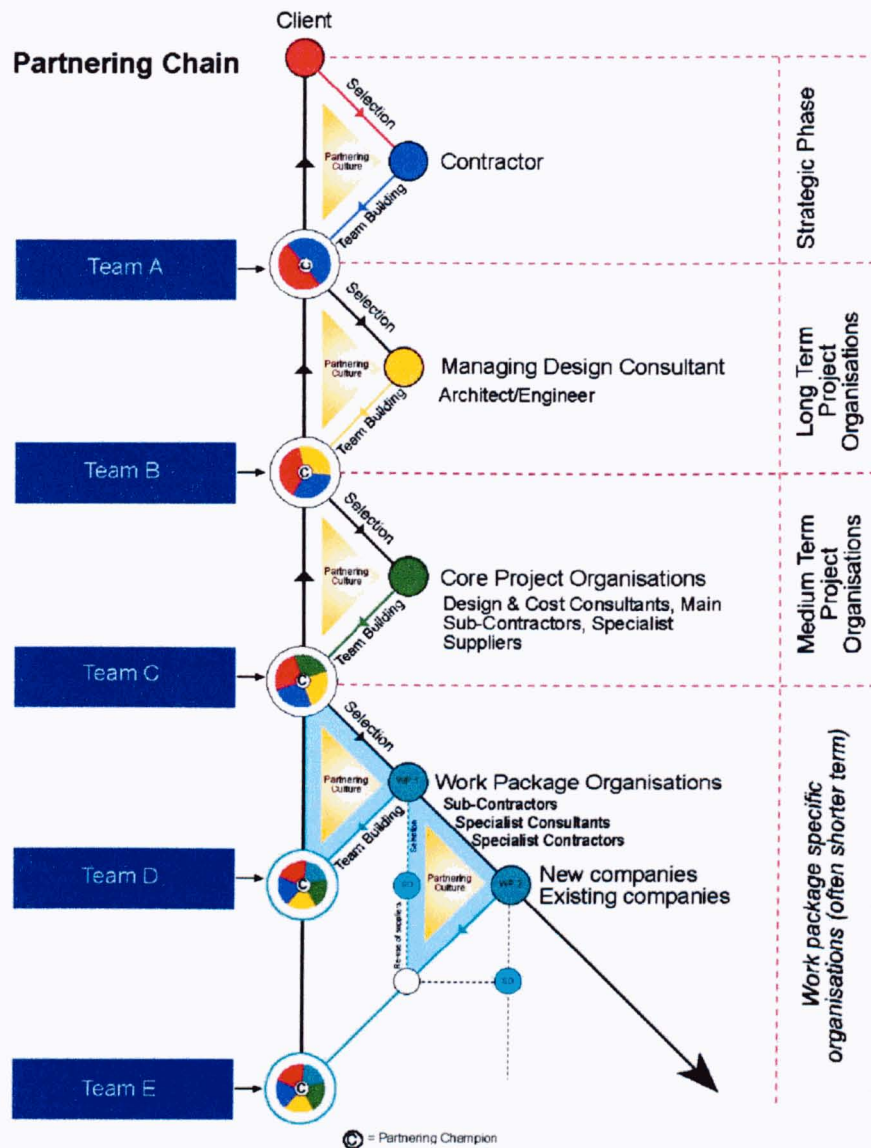


Figure 56: A suggested 'Partnering Chain' for a client-contractor partnering relationship

As can be seen from the diagram a team is required at the strategic phase consisting of representatives from client and contractor organisations. Once a long-term strategy has been agreed and a specific project is being considered a team consisting of client, contractor and project manager needs to be established. This might consist of an architect, engineer or commonly a project management consultancy. It is also important that

key design functions are represented in the arrangement and there should be a team consisting of a representative from each. Finally the work packages need to be fully integrated into the partnering arrangement. Champions are required from each main work package that can establish appropriate teams and implement partnering according to the project strategy. The number of these will depend on the project type and number of work packages required.

8.5.2.1 Partnering Teams

The concept of the *Partnering Chain* and supporting partnering teams can be further defined as illustrated by the model in Figure 57.

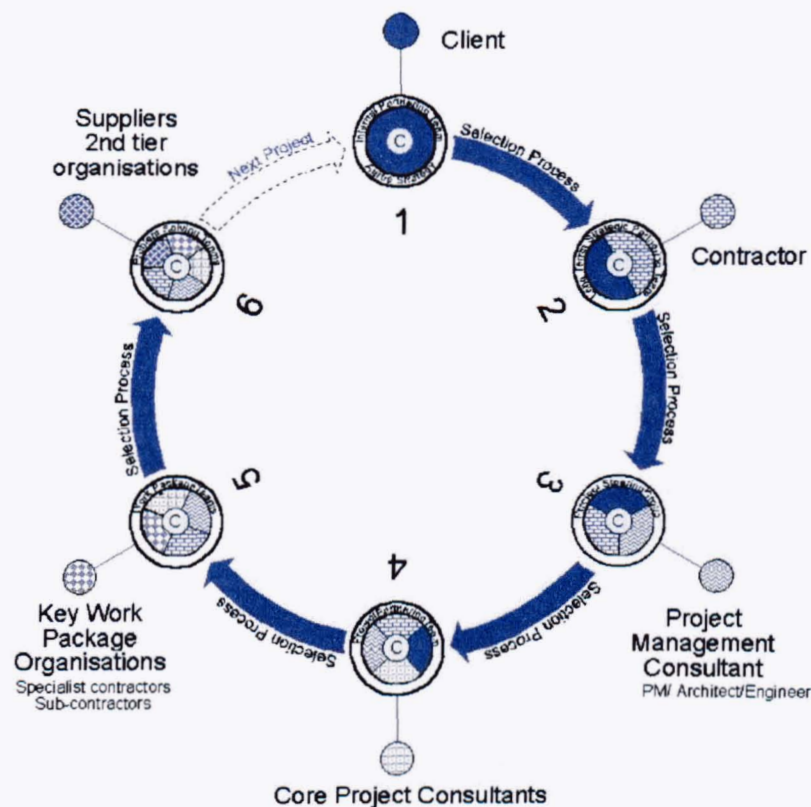


Figure 57: Partnering Chain as a cyclical model.

The establishment of new teams is required on each project and the chain can therefore be viewed as a cyclical model. The chain has also been

revised to include a separate requirement for problem solving teams, which are discussed in Section 8.5.3.6.

The research has undertaken interviews and surveys with a range of different project participants, working within teams with different functions and at different project levels. In order to satisfy team requirements at all levels for an effective well-structured partnering arrangement, it is recommended¹⁷⁸ that the following teams should be identified and a partnering champion associated with each:

1. Internal Partnering Team
2. Long Term Strategic Partnering Team
3. Project Steering Group
4. Project Partnering Team
5. Work Package Teams
6. Problem Solving Teams

The development of such teams (either physical or virtual) can enable the partnering policy to be more effectively managed through identifiable lines of communication and can simplify the allocation of responsibilities, at all project levels.

Key players from each relevant organisation will be required at each stage and these should be people with decision-making authority. On an effectively planned partnering arrangement the allocation of personnel will frequently require changes to fit in with the partnering strategy. It is often not enough to use previously implemented organisational

¹⁷⁸ Recommendations are based on the lessons learnt from principally the Ferodo, IT and Amec/BAA case studies where the importance of establishing teams to manage both long term and project specific functions was identified. Refer to section summaries.

structures¹⁷⁹. New and specific roles will appear such as partnering champions and action teams. The partnering arrangement requires managing throughout all strategic and project levels and the appropriate personnel should be briefed and in place at the correct stage for the overall partnering strategy to be effectively implemented.

8.5.3 Partnering Team Responsibilities

Each team will be established for a specific purpose. It is recommended that the following key responsibilities regarding implementing the key principles discussed in Section 6.1 be as follows:

8.5.3.1 a) *Internal Partnering Team*

It is recommended that the main responsibility of the *Internal Partnering Team* is the development of an **internal policy** and the selection of the main partner and should consist of client senior staff and a construction advisor if required. To achieve effective front end planning the team should be in place as early as possible. To achieve effective front end planning the team should be in place for Stage 1 of the strategic process 'Identify Objectives'¹⁸⁰. The company should have a clear idea of what partnering means to them and of their main motivations and objectives. An internal company partnering policy should be developed and the agreement and commitment of internal personnel obtained. It is recommended that all organisations intending to partner should develop an **internal policy**¹⁸¹.

¹⁷⁹ The FI case example demonstrated the benefits associated with restructuring organisations to accommodate teams from both partners

¹⁸⁰ Please refer to Life Cycle Model. Section 6.3

¹⁸¹ See internal partnering policy development (Fig 52)

The *Internal Partnering Team* (of the client organisation) will have the responsibility of selecting the main partner. The selection of an appropriate partner is vital and great care must be taken in order to find a compatible partner. Potential partners must be rigorously assessed using techniques outlined in the internal partnering policy. A series of interviews and at least one workshop will be required in order to effectively find the most suitable company.

8.5.3.2 b) *Long Term Strategic Partnering Team*

The main responsibilities of the *Long Term Strategic Partnering Team* are the development of a **Strategic Charter** and the agreement of objectives. The team should consist of senior representatives from each of the main partners (client & contractor). The team should be in place for Stage 3 of the Strategic Process 'Developing the Relationship'.

We have seen that the objectives of both companies need to be compatible and not conflict. The essence of partnering is for both to help each other succeed in a win-win relationship. For that to occur both companies must express their aims and objectives openly and honestly from the outset. At this stage the companies can assemble a joint team, which will be responsible for the management of the overall strategic partnering. (*Long Term Strategic Partnering Team*). This joint team will vary in size depending on complexity of the project and should aim to protect the interests of the partnership, not specific company interests. The strategic team should develop a **Strategic Charter**, which describes the main aims of the long-term agreement as well as initial procedures for its operation. Overall areas for improvement should be agreed and an initial *Continuous Improvement Programme (CIP)* should be developed which is tailored to suit the companies involved and to the particular project types.

8.5.3.3 c) *Project Steering Group*

The main responsibilities of the Project Steering Group are the development of a **Project Strategy** and production of an outline *CIP*. The team should consist of partnering champions from the main partners, the managing design consultants and a *Partnering Facilitator*. The team should be in place for Stage 1 of the Project Specific Process ‘Developing the Relationship’.

In order to ensure the strategy is implemented effectively at project level a *Project Steering Group* should be established consisting of principle personnel from the long-term project organisations. This requires a project manager or Managing Design Consultant (MDC)¹⁸² to be brought into the process at the beginning in order for opinions regarding the strategy to be voiced by representatives from the client body, production and design functions. The steering group will have the responsibility for developing the *Long-Term Strategy* into the best possible **Project Strategy** in order to satisfy the requirements of the partnering agreement. (It can be of great benefit if a long term relationship also exists with the MDC, so that the whole *steering group* is familiar with the particulars of the *Long Term Strategy* and the areas for improvement, as well as problems encountered on previous jobs (if not the first) within the agreement). An *Outline CIP* plan should be developed by the *Project Steering Group*, which should outline the procedures, functions and main responsibilities. A project plan should also be developed which describes preferred functions, roles and responsibilities and which prescribes preferred initial roles and functions of temporary organisations, as and when they appear on the project. The project plan should also outline a programme of work packages.

¹⁸² MDC) (Latham, 1995)

8.5.3.4 d) *Project Partnering Team*

The recommended main responsibilities of the *Project Partnering Team* are to develop and commit to the *Project Charter*, to firm up the outline *CIP* and to implement the project partnering. The team should consist the main partners, project consultants, an independent adjudicator and senior representatives from key sub-contractors and key suppliers. The team should be in place for Stage 3 of the Project Specific Process 'Project Team Building'.

The selection of key project organisations should be undertaken prior to this stage using the selection procedures agreed in the *Strategic Charter*. All key organisations can have an opportunity for feedback on the **Project Charter** and this is can be undertaken at a *Project Workshop*. Here the longer term organisations will have an opportunity to become more familiar with the other project organisations and will be introduced to the requirements of the project partnering. The project strategy can be refined at this stage and a work package plan can be developed by the project team and responsibilities and roles identified. This is an important stage as individuals will be assigned responsibility for developing particular work package teams and ensuring the partnering philosophy is trickled down effectively, regarding selection procedures for temporary organisations and labour, as well as overall work ethics. The choice of individuals to champion the partnering is important, as many of the organisations will be new to the approach. Therefore effort is required to obtain full commitment from the individuals involved and should form part of the initial selection procedure for project organisations.

8.5.3.5 e) *Work Package Teams*

The main suggested responsibility of the *Work Package Team* is the effective completion of a specific package in the spirit of Partnering and to ensure the effective implementation of the *CIP* procedures. The team

should consist of package managers from suppliers/subcontractors, partnering champion/s from the main contractor and relevant consultants who need to agree to a specific set of objectives for the particular work package. These objectives can be embodied within a **Work Package Charter**. The team should be in place for stage 4 of the Project Specific Process 'Management and Control'.

Key work packages should be identified at the project-planning phase and it is important for clearly identifiable teams to be established as early as possible, for clarity of roles and responsibilities. A partnering champion for each is invaluable in maintaining the *Partnering Chain*, throughout the project ensuring effective feedback CIP.

8.5.3.6 *f) Problem Solving Teams*

For particular packages, members of *Problem Solving Teams* should be identified who are responsible for **Problem Resolution**, overcoming difficulties or problems encountered for the particular package. The size of such teams will vary according to the size and complexity of the package and should involve operational and managerial personnel who will develop an appropriate action plan. Such problem solving teams must be empowered to be able to carry out plans on their own. If problems cannot be resolved in the allocated amount of time then the problem should be passed up to the next level¹⁸³. All information regarding the success or failure of action plans should be effectively fed back so that the performance of the CIP can be monitored effectively.

Figure 58 updates the model to show the key functions of each team and when each team should be established by.

¹⁸³ See Figure 24

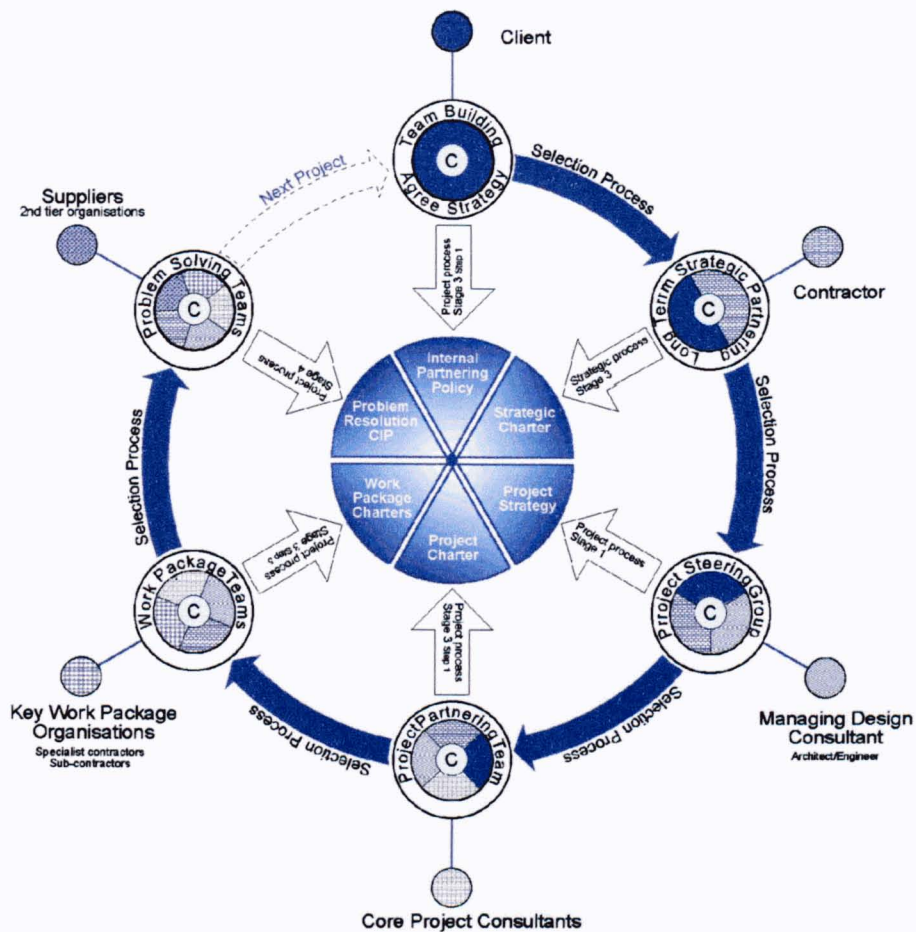


Figure 58: The Operational Lifecycle Model

8.5.3.7 Summary

These recommended teams and their associated roles and responsibilities have been introduced into the partnering processes thereby adding further rigour to the recommended approach for designing and implementing partnering arrangements. The processes including the teams are illustrated in section 8.6.

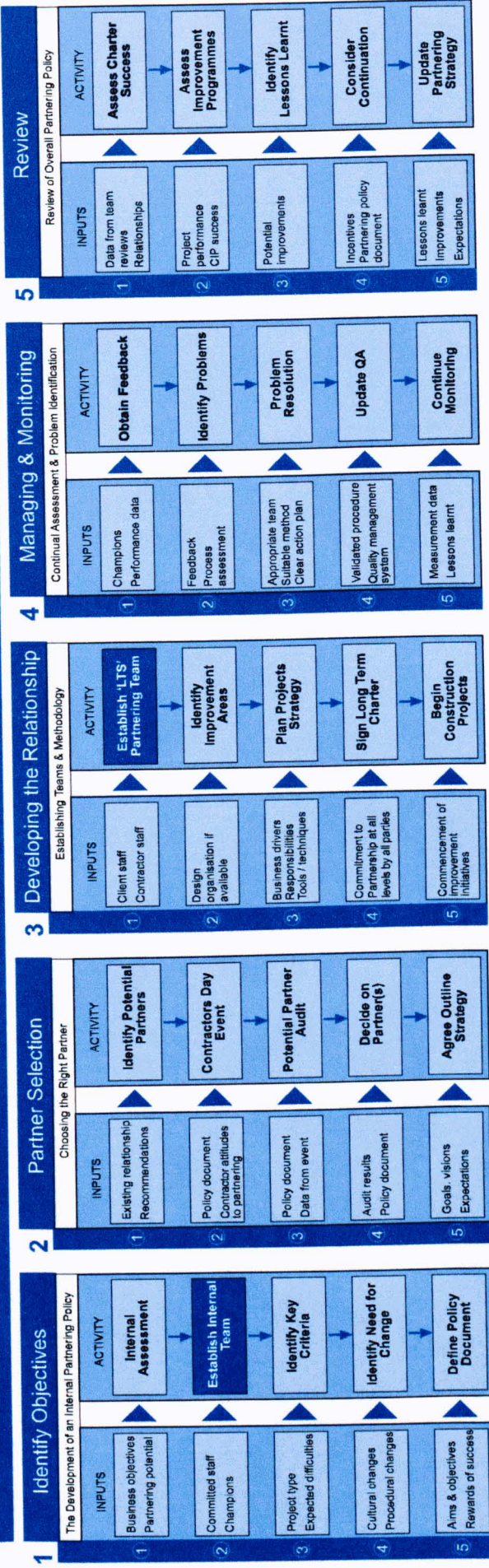
8.6 The Partnering Processes

Section 8.5 discussed a recommended best practice approach based on the key partnering principles and recommendations ascertained from the research. A set of required inputs for each stage in the strategic and project specific processes has been identified and the recommended teams that should be put in place, their principle responsibilities and when they should be established, have also been proposed. The final high-level processes can now be presented which contain all of the following information.

1. Key stages (*Long Term Strategic* and *Project Specific*)
2. Aim of stage
3. Five key sub activities for each stage
4. Suggested inputs for each stage
5. Partnering teams required (Highlighted)
6. When the partnering teams should be established

The processes illustrated here represent the high level processes for each stage. For a more in depth presentation of the processes that have been developed and a description of each activity please refer to Appendix 1. A third column has been added to the processes in Appendix 1, entitled tools/techniques which proposes recommended tools and management techniques which might be utilised when undertaking each activity.

Strategic Partnering



Project Specific Partnering

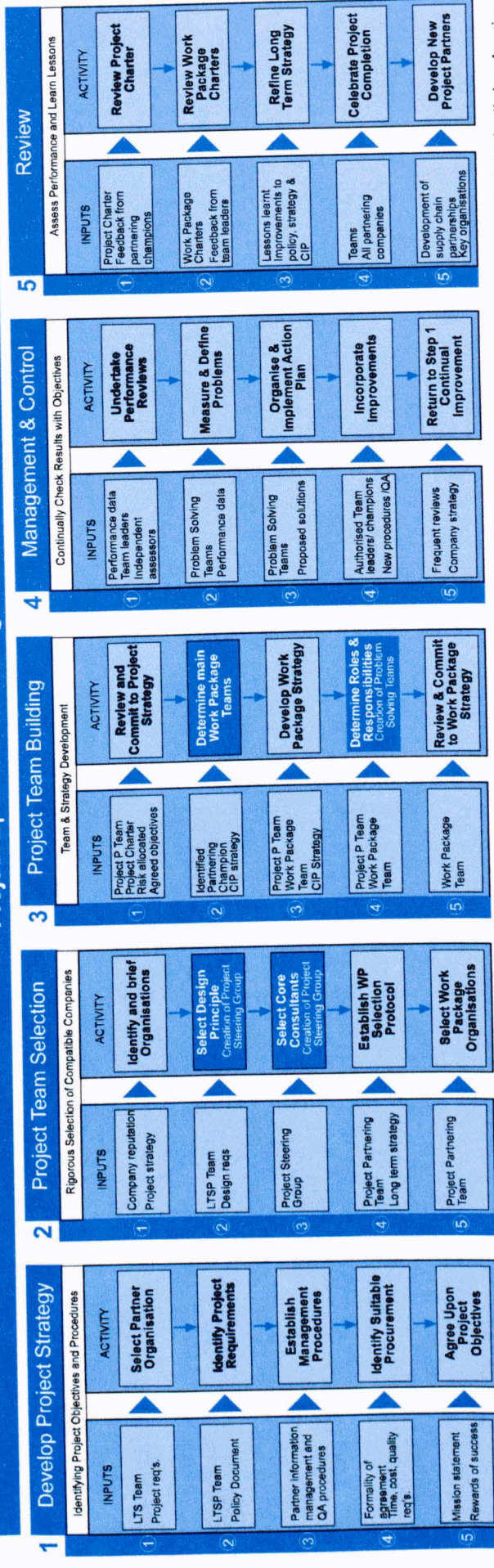


Figure 59: Long Term Strategic & Project Specific Partnering Processes

Chapter 9: Conclusions

9 Introduction

This Chapter is split into three main parts. The first entitled '**Thesis Overview**' provides a summary of the research undertaken and notes the principle shortcomings of the research. The principal research findings, which culminated in the Partnering Implementation Processes, are also summarised.

The second section entitled '**Conclusions**' reviews the main aims and objectives and hypotheses of the thesis and discusses the extent to which these were achieved or supported. This section also makes a number of conclusions with respect to the key principles required for successful partnering which have been identified through the research.

Finally the Chapter finishes with a '**Recommendations**' section, which considers recent developments in the field of partnering and suggests how the output of the research can be developed further.

9.1 Thesis Overview

This thesis identifies the key criteria for successfully designing and implementing partnering arrangements in the construction industry and has developed a set of project specific and Long Term Strategic Partnering processes¹⁸⁴ based on the key principles and best practice partnering approaches identified through the research investigations.

The study began with an in depth literature investigation into partnering in other industry sectors, entitled *Lessons from Manufacturing*, in order to identify the various definitions and respective elements of partnering, along with critical success criteria and principles. This literature review

¹⁸⁴ Appendix 1

highlighted the differences between for example equity and non-equity based partnerships. The automotive industry, which has had similar historical problems of fragmentation and adversarialism as construction, was used as a main study. The well-documented lessons in how many of these problems were resolved through the use of collaboration and partnering was investigated. The practicality of the key principles identified, with regard for their use in construction was also considered.

Following this an investigation was undertaken into the current state of the construction industry regarding its acceptance of and attitudes towards the partnering approach. Key developments in the adoption of partnering were investigated such as partnering being recommended by both Latham and Egan as valid and important management approaches.

Partnering has much to do with the allocation and acceptance of risk by contributing organisations and Section 2.3 explores this area. The potential benefits for construction that can be attained through effective partnering, according to the literature, are then presented before the main barriers to effective partnering are described. Cultural resistance is discussed as a major problem for the fragmented construction industry and the resultant conflict that is often a result of this is discussed. The literature review finishes with a review of the forms of resolution procedure that are currently employed to resolve disputes.

From the review it became evident that partnering in construction was less refined and developed than it's manufacturing counterpart, and that arrangements were often based more on relationships between individuals rather than long term strategy. From this, two approaches were distinguished:

Philosophical Partnering Relationships: These relationships appear to have the following facets: (a) a reliance on past-experience at senior level of the

ways of establishing and keeping customers; (b) the selection of partners for projects through relationships (often personal); (c) the application of aspects of formal partnering using teams, team building, and superior communication; and could be characterised by practices such as, shared vision, risk sharing and/or cost sharing between partners.

Agreement-Led Partnering: This method developed as a result of management learning and is driven by a prime emphasis on quality and cost; characterised by the following facets: (a) formal selection; (b) formal partnering agreements; (c) application of partnering activities; and (d) risk allocation and cost-based contracts.

The literature provided some general observations and proposed two key requirements for partnering success. (See Chapter 2 Summary) This study revealed that the term partnering in the UK construction industry meant many different things to many different people. It was clear that most people knew of the term but many people had different attitudes towards and experiences of the approach. It was this finding that led to a broad research method being adopted, which is discussed in Section 3.

The research method adopted consisted of a triangulated approach consisting of several techniques including scoping case studies, in depth case studies, questionnaire surveys and semi structured interviews.

Chapter 4 presents the initial scoping research, which was undertaken. This consisted of 3 mini case studies and a questionnaire survey, which was sent out to 350 Contractors. The manufacturing mini cases involved companies in the automotive and telecommunication industries who had engaged in partnering over a number of years. These companies had clear policies and procedures and were relatively rigorous in assessing quality and capturing performance data. This information was assessed and

analysed in terms of its relevance to construction. The questionnaire survey revealed data regarding people's attitudes towards partnering, levels of strategic development and levels of sophistication of procedures and processes for partnering development and implementation. The survey also identified the benefits and costs of partnering by comparing partnered projects with non-partnered projects on time, cost, quality, management style and communication. The results indicated that partnering has a beneficial effect on most criteria. The key lessons learnt and key partnering principles identified are presented at the end of Chapter 4.

Section 5 presents the three Bovis case studies undertaken. Bovis are known to have long term relationships with many of their clients and the research sought to ascertain whether the methods used constituted an effective partnering approach or not. It was found that although some partnering principles were adopted the approach used was not representative of formal partnering because there was no rigorous partnering strategy in place, but rather a QMS approach which employed certain aspects of partnering such as continuous improvement. The key lessons learnt and key partnering principles identified are presented at the end of each case study and summarised at the end of Chapter 5.

Chapter 6 compares the key principles identified from the literature review, scoping studies, mini cases and Bovis case studies. It proposes a lifecycle model for effective partnering consisting of two distinct types being *Long Term Strategic Partnering* and *Project Specific Partnering*. It also pulls together the principles identified for effective and rigorous partnering and distils them into a set of key partnering principles. This is followed by recommendations for management procedures, which are most likely to be successful in improving the development and implementation of partnering strategy in construction. The key principals

and lifecycle model are then used as a basis for further investigation of a 'model' partnering arrangement undertaken between BAA and Amec.

Chapter 7 presents this case study, along with a set of key principles. It is revealed that the partnering Framework Agreement is the best example of partnering out of all the cases with some very positive results. However there were areas where improvements could have been made for example a clearer strategy that was better communicated to participants. The recommendations of the team and lessons learnt from the case study were used to further refine the processes contained within the life cycle model. A set of key sub activities for each of the partnering stages identified in the lifecycle model were agreed with the Amec senior managers at a final workshop.

Chapter 8, the discussion Chapter appraises the case studies and discusses the shortcomings and deficiencies of partnering that have been identified through the research and how these deficiencies might be overcome.

Section 8.5 presents the best practice approach, which is proposed based on the research findings. It suggests a set of key inputs for each of the activities identified by the Amec case study and also presents a model explaining the importance of establishing clearly identified teams to help manage the *Partnering Chain*. This model is further developed into a cyclical operational model, which defines the specific teams and the key roles of each, required for effective lifecycle partnering. Key components consisting of *Internal Policy Development*, *Strategic*, *Project* and *Work package Charters*, *Project Strategy* and *Problem Resolution* and *CIP* initiatives are then incorporated into the final Strategic and Project Specific Partnering; development and implementation processes. These are presented in Section 8.6 with a more detailed explanation being presented in Appendix 1.

9.1.1 The Research objectives

The principal objectives of the research were as follows:

- To identify key criteria for effective partnering in other sector where partnering has been successfully used.
- To analyse the design and operation of partnership arrangements in construction, and to identify the criteria upon which successful partnering depends.
- To design and validate a set of long term and *Project Specific Partnering* processes to support development and implementation of formal partnering arrangements in construction.

The research has achieved the identification of the key criteria in other sectors through the literature studies of partnering in manufacturing and the undertaking of the Ferodo and FI cases. These revealed that partnering in manufacturing means a rigorous and formal relationship, which is measured against strict performance targets. It was revealed from these investigations that it was common for the organisation driving the partnering to have an internal company partnering policy and also in some instances such as in the Ferodo case, to have a documented partnering strategy in place to which any selected partner must adhere. This rigour was clearly lacking in the majority of construction cases investigated and these findings along with the Amec/BAA lessons were key in the development of the strategic processes.

The thesis has discussed how partnering means many things to many people and this would result in partnering being interpreted and understood by participants in many different ways. Project participants need to be aware of their responsibilities and their roles. One of the many complaints

from individuals in the cases and from the questionnaire respondents was that they were not sure what their role was within the partnering arrangement when the approach was not communicated effectively. The research has therefore produced an initial set of processes, which help achieve this common partnering view and which will help companies to plan, develop, implement and communicate the particular partnering strategy throughout the *Partnering Chain*. The potential for these processes to be developed further is discussed in section 9.3, Recommendations

9.1.1.1 Limitations of the Research

In retrospect it would also have been useful to obtain feedback on the processes from an experienced manufacturing organisation that have a history of successful implementation. Furthermore it would also have been desirable for the questionnaire surveys and case studies to be able to examine more rigorously applied examples of partnering in construction. However when the research commenced partnering was in its relative infancy in construction and the case studies chosen represented best practice examples of partnering in the UK industry at that time.

The design and validation of the processes has been achieved¹⁸⁵, however the researcher recognises that this has only been undertaken with one main organisation. Ideally further validation of the processes would be undertaken with other organisations working on different project types to ensure the processes are generic.

In their defence the processes are based on key principles and procedures for effective partnering which have been gathered and selected from a range of project types, including manufacturing examples and are underpinned by the recommendations of a large number of construction individuals whose attitudes and opinions have been gathered both from the

¹⁸⁵ At the Amec workshop

case studies and the questionnaire surveys (which total over 200 individual responses alone).

The researcher also sought access to a partnering project for its entire duration, which would have been the most desirable situation for collecting case study data, as it would enable monitoring of partnering throughout the project. However this would have required most of the researchers time and resource to be spent on one case and it was felt that the variety of organisations investigated along with the three Bovis case studies enabled a richer data sample to be collected than would otherwise have been possible. It also enabled a high level, comparative assessment of the Bovis cases, which provided valuable data on the company approach to long term partnering.

The researcher therefore feels that the adopted methodology has been successful in providing a broad and varied data set with which to develop the recommended processes. The strategic and project specific processes themselves, mirror each other to some extent as they both involve establishing rigour, identifying clear objectives, identifying the right partners, building the right teams, managing the processes and effectively reviewing and revising them. However the two processes are very different in that the strategic approach is based around agreeing a set of clear client business objectives involving the client and other main partner/s. The project specific process utilises resource from a range of organisations and requires numerous teams to be established in order to manage the partnering. However the two are inextricable linked as illustrated by the lifecycle and operational models. The next section will present the main conclusions that can be drawn from the research findings.

9.2 Conclusions

The following conclusions are considered to be critical success factors for partnering in the UK construction industry. As such many of them have been incorporated into the Partnering Processes.

- The term partnering means many different things to different people and there remain multiple definitions of partnering. The recommendation emerging from this research is that partnering should be viewed as *'a rigorous management process which considers both the long term company and project specific requirements of all partners and strives to achieve their agreed objectives. Its function is to enable the rigorous selection of compatible teams who understand their specific roles and responsibilities and who are managed through the utilisation of clearly defined management procedures such as continuous improvement and quality assurance programmes, problem avoidance and resolution procedures, and risk management. .*
- The main drivers for the growth in partnering appear to have been (a) macro economic factors, (b) increased international competition, (c) client push, (d) a recognition by the construction industry that greater emphasis was needed on customer orientation and customer care, and (e) an identified need for a new culture to replace the existing image of adversarialism.
- Critical issues to the long-term successfulness of partnering initiatives exist such as; (a) the development of a partnering culture within the lead partner organisations; (b) a clear strategy with agreed mutual objectives; (c) the criteria for selection; (d) establishment of the correct teams & champions; (e) a defined *Partnering Chain* to help manage and communicate the initiative; (f) the interface between strategic and project specific processes; (g) the sort of contract drawn up for

(agreement-led) partnering; (h) the criteria for evaluating, altering, and evolving the partnering strategy.

- Partnering improves relationships through trust and openness, enhanced communication opportunities and enhanced quality and content of communication, which in turn allow better planning, and the surmounting of problems at an early stage through intervention. The general benefits of partnering appear to be:
 - Greater care over strategic decisions; greater levels of innovation; less-exploitation of suppliers/ subcontractors; greater involvement of all organisations; improved communication; standardised processes; standardised procedures; reduction in conflicting objectives; reduced confrontation; continuity of personnel; more efficient procedures; less constrained by contract; less paper work; and improved safety standards.
- Little evidence was found of the 30% savings in cost being identified by companies¹⁸⁶, as suggested by Bennett & Jayes (1995); however a wider set of more qualitative criteria was being used to drive and review partnering success rather than cost savings alone. These include:
 - *Effects regarding time*: More effective planning; greater certainty in programme; better adherence to programme; increased likelihood of timely competition; and shorter lead-in times. Resulting in better time targets being achieved.

¹⁸⁶ However, Amec/BAA arrangement came close over the five year Framework Agreement.

- *Effects regarding cost:* Less focus on cost-cutting and more focus on cost certainty; fairer profits for all; more reliable profits; higher fixed costs; lower direct costs; greater investment; reduction in legal costs; better value solutions; reduced marketing costs; reduced tendering costs; and reduction in selection processes. Resulting in improved cost performance.
- *Effects regarding quality:* Improved quality of product; improved quality of process; more consistent performance; steady incremental improvements; fewer failures; fewer defects; greater understanding of requirements; greater customer satisfaction; greater involvement with the design process; and more reliable flow of design information.
- A focus on the process of partnering is important as well as the output measures. A process approach to partnering enables a total project view of the particular project to be created and communicated.
- A pre-planned strategy established prior to project start up is a key recommendation from all of the cases. This is normally far more achievable under a strategic partnering arrangement than project specific, where a generic partnering approach or method for a particular company, is developed prior to the commencement of any specific project. The development of strategy prior to project start up is immensely valuable, enabling the specific project management strategy to be tailored to adapt to the partnering policy from the outset. This saves a lot of time and confusion in comparison to having to develop a *Project Specific Partnering* strategy from scratch in the midst of the normal incompatibilities, unknowns and resultant stresses associated with the early stages in a project.

- The establishment of partnering teams is vital to the effective implementation of a partnering arrangement. Teams need to be part of the partnering strategy and CIP procedure, clear in what their objectives are, with champions empowered to drive the partnering forward within their remit.
- Continuous Improvement is a key component to partnering and the procedures should be part of the overall Project Specific Partnering strategy i.e. linked to the objectives of the particular partnering arrangement at hand not simply to generic internal company quality management goals (as in the Bovis case studies)
- Informal and un-rigorous partnering can be difficult to monitor regarding performance and lacking in any identifiable performance improvements.
- Creation of new project specific teams containing individuals from different parent organisations should seek to achieve equality of participants such as pay, conditions and perks otherwise resentment/conflict is likely to occur which will adversely affect the performance of the 'virtual team'.
- The development of an appropriate partnering culture is not as achievable as one might expect. The balance is difficult. One cannot force the relationship but also one cannot leave it to be based on a purely informal basis such as individual relationships, which can rapidly change.
- Projects are in a state of continual flux. Communication of the agreed partnering strategy to not only existing key team members but also to those more temporary participants, sub-contractors, design specialists

etc, is vital. They need to be aware of where they fit into the overall partnering approach (process) when they arrive on the project and what is expected of them.

- Partnering does not guarantee improvements. The potential risks of partnering include; increased dependence on the supplier; less supplier competition; greater management complexity; increased co-ordination issues; increased communication costs; more support required for supplier; different reward structures required; less personnel mobility; and new styles of negotiation needed.
- For the supplier(s), the risks appear to include sharing of cost information; taking on of risk from design-to-warranty; less autonomy; higher communication and co-ordination costs; less personnel mobility; and risk of breakdown of the relationship.

There is recognition that Long Term Partnering might aid the development of integrated IT strategies between partners and findings indicate greater levels of integration (36% partnering 16% non-partnering). However there is little evidence of improved IT integration between main project organisations and supplier organisations. This is perhaps indicative of the lack of rigour with which partnering is currently being implemented in UK construction regarding change and development of procedures and processes. Information systems are generally not being modified to suit the partnering arrangements and the potential for more integrated IT systems between partners, (which is afforded by more stable partnering relationships) remains largely unfulfilled.

9.3 Recommendations

The Uniqueness of the Research Output

The partnering processes that have been developed as the main output of this research, along with their component activities, inputs and recommended management principles, provide a tool with which practitioners can plan, implement and communicate effective partnering arrangements. The processes focus on overcoming the main problems that have been identified with partnering in the construction industry and define a generic methodology, which contains the key principles for effective partnering, that have been identified throughout the research. The processes provide a unique level of detail and a generic sequence for implementation, which helps ensure the partnering strategy is developed upfront and is effectively managed and communicated to all participants throughout the lifecycle of the arrangement or project.

Further Work

There has not been the time or resource available to undertake an in depth comparison of the final partnering model and processes resulting from this research with other models from recent research output and the researcher recognises that this would be a necessary exercise to be undertaken prior to any further development of the processes. There is also the opportunity to undertake a more of scientific analysis of partnering than existed at the outset of this research due to partnering being better understood and implemented more comprehensively than was the case 5 years ago. The processes will enable partnering to be implemented more rigorously and because they are designed to enable the more effective monitoring of partnering and its supporting procedures, there is the opportunity for partnering performance to be measured more precisely and a greater degree of mathematical testing and analysis to be undertaken. There is still a shortage of quantitative data on partnering and it is therefore recommended

that such a research approach be adopted in any further work, which builds upon this research.

The partnering processes are stand-alone guides on the development and implementation of partnering and can be modified to fit with all forms of contract. Such tailoring of the processes has been outside the scope of this thesis although the various procurement routes and contract forms have been considered in their development. There is therefore the need for further work, which considers the impact of implementing the generic processes under specific contract forms.

A new form of contract has been developed since this research was embarked upon entitled PPC 2000, which is the first Project Specific Partnering contract and aims to encapsulate the principles of partnering. The contract is not an implementation guide however and nor does it consider fully the aspects of Long Term Strategic partnering. Criticisms have been levelled at it.

Criticism has also been targeted at PPC 2000 regarding it's muddling of the roles of partnering and contracts in construction procurement.

"To think that the attitude of working together positively is going to be encouraged by writing words into contracts is muddled thinking. There is a place for contracts and charters, but to confuse the two is only going to lead to further problems" (Helps, 2000).

Helps goes on to state that he doesn't believe that partnering is suitable for every project or every project organisation.

“There are still clients who transparently use the partnering label as a smokescreen for holding contractors to ever diminishing margins, while expecting them to sacrifice the contractual protection they would usually expect. Partnering in such circumstances is like swimming with sharks rather than dolphins”

More recently Bessey (2001) states that English law is not ready for the contract *“because English courts remain overwhelmingly concerned with the need for certainty”*. One of the difficulties with the partnering culture and therefore PPC 2000 is to produce clauses that have sufficient certainty and clauses requiring collaboration are very difficult to police, and even harder to prove breach of (or resulting loss) in a court of at arbitration proceedings. Because of this the responsibility is placed firmly with those preparing such provisions and contracts (Bessey, 2001).

Therefore a study, which involves utilising learning from this research to implement PPC 2000 might reveal weakness in both the implementation processes and perhaps in the contract, and will certainly provide lessons with which to assess if the rigidity of the contract and its requirement for certainty, is compatible with the more flexible practices inherent in a collaborative approach.

The Researcher has undertaken research on process implementation in construction for two years implementing a critically acclaimed process method on a large construction project. The study revealed that many of the problems associated with the process implementation on the project involved communication amongst participants and many problems were attributed to organisations working to their own agendas with no mutual objectives or goals being put in place for the project. The process method implemented did not consider formal partnering within its framework

however and as a result could not overcome the above problems as effectively as it might. Many of the problems could have been reduced considerably if certain partnering principles had been adopted on the project.

It is recommended therefore that there is a need for the findings from this thesis to be adopted into current process management methodologies for project management. As the Bovis Improvement Initiative and its constituent procedures such as CIP illustrated, it is not enough to implement existing company procedures in isolation to a partnering arrangement, if the full benefits of partnering are to be achieved. There is much work being undertaken on process management¹⁸⁷ which utilises process mapping techniques to identify what needs to be done and when over a project lifecycle. Therefore, proposed further research might involve developing and mapping the activities identified in this thesis, into a generic process map, the result of which would consider both design and construction activities and deliverables, as well as partnering activities, inputs and procedures.

¹⁸⁷ For example the Generic Design and Construction Process Protocol

10 References

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APPENDIX 1: THE PARTNERING IMPLEMENTATION PROCESSES

APPENDIX 1

IMPLEMENTING PARTNERING: THE PARTNERING PROCESSES EXPLAINED

Process Explanation
Long Term Strategic Partnering

Identify Objectives

The Development of an Internal Partnering Policy

	INPUTS	ACTIVITY	TOOLS/TECHNIQUES
①	● Business objectives ● Partnering potential	<pre> graph TD A[Internal Assessment] --> B[Establish Internal Team] B --> C[Identify Key Criteria] C --> D[Identify Need for Change] D --> E[Define Policy Document] </pre> Internal Assessment	■ Market research ■ Discussion groups
②	● Commitment of key personnel to act as champions ● Dissemination of ideas	Establish Internal Team	■ Staff training ■ Workshops ■ Discussion groups ■ Seminars
③	● Initial forecasts of: - Project type - Size - Cost - Time - Complexity - Frequency - Other resources ● Understanding of key problem areas	Identify Key Criteria	■ Use of consultant with construction expertise if required
④	● Cultural & procedural changes: - Corporate change - Departmental change - Changes to procedures, tools & techniques	Identify Need for Change	■ Questionnaires ■ Brainstorming ■ Discussion groups
⑤	● Aims & objectives ● Rewards of success	Define Policy Document	■ Discussion groups

DETAILS

- Client company management need to agree about the value of undertaking an internal assessment (e.g. likely requirement for future construction works)
- An internal assessment should reveal useful information about the company, and highlight how partnering might benefit existing strategies
- Business strategy and the benefits of collaboration with other construction organisations should be considered
- Full commitment from senior staff is vital to the development of a long-term partnering policy and its effective implementation.

1

- After confirming the applicability of a partnering approach, an *Internal Partnering Team* should be developed
- The Internal Partnering Team should consist of partnering champions and will be responsible for:
 - The dissemination of a partnering approach through staff education
 - Feeding back ideas from various parts of the company
- The Internal Partnering team plays a crucial role in the development of a partnering policy which is understood and accepted by the whole company

2

- Estimating future build requirements enables client organisations to make initial forecasts of resources needed and recommendations on appropriate forms of procurement
- Contractual approaches will vary dependent on size and complexity (and hence risk). The general trend for successful partnering policies is:
 - Simplification of the contract
 - Development of a culture of cooperation and dispute avoidance
 - Firming up of problem resolution procedures
- The Internal Partnering team plays a crucial role in the development of a partnering policy which is understood and accepted by the whole company.

3

- Client organisations must have a formal procedure for the selection of long term partners. This procedure, along with the particular tools and techniques which are used, should be included in the policy document
- Existing company policy and procedures should be examined in the light of Step 3. This will highlight any potential incompatibilities between existing policy and strategy and the requirements for partnering
- Appropriate cultural and procedural changes required at corporate and departmental levels should be implemented.

4

- A *Mission Statement* should be included in the partnering policy document. This describes the company's visions and expectations of partnering, and should be a statement with which all company personnel can identify.
- A cultural change is required in most companies to gain the full benefit of the partnering approach. The mission statement is a good way of beginning this process of change.
- The policy document should be overly detailed or prescriptive, but should describe the company's goals and its strategy for achieving them, and what is expected of personnel
- For the partnering policy document to be implemented effectively, it is important that it is the voice of the whole company *and not just senior managers*.

5

Partner Selection

Choosing the Right Partner

	INPUTS	ACTIVITY	TOOLS/TECHNIQUES
①	● Experience from previous relationships ● Recommendations from other parties	Identify Potential Partners	■ Industry rankings ■ Benchmarks ■ Develop partner list ■ Questionnaires
②	● Policy document ● Contractors' attitudes and experiences of partnering	'Contractors Day' Event	■ Workshops ■ Discussion groups ■ Presentations
③	● Policy document ● Data gained from Contractors Day event ● Assessment of contractor compatibility ● Assessment of contractor capability	Potential Partner Audit	■ Assessment tools ■ Questionnaires ■ Interviews ■ Visits and samples
④	● Results of potential partner audit ● Partnering policy document	Decide on Partner(s)	■ Assessment tools ■ Interviews
⑤	● Partnering policy document ● Company strategy: - Long term goals - Key success factors ● Visions and expectations	Agree Outline Strategy with chosen contractor(s)	■ Discussion groups

DETAILS

- The procedure for potential partner identification will depend upon the experience of the client regarding construction activities
- Client companies may select organisations with which they have had previous experience
- Client companies who have experience of a strategic partnership should have a data base of company profiles and performance history.
- Client companies new to strategic partnering should approach those with more experience for recommendations.

1

- The Contractor Day provides an opportunity to explain to all potential partners what is required of them and the proposed way of working.
- Client can obtain feedback from a select group of construction experts regarding their views/ approach to partnering and contractors can assess whether they are willing and able to adhere to the requirements of the client regarding partnering.
- Openness is key and contractors unable to commit to requirements should pull out. They could remain on the clients database for possible future selection.

2

- Once partners have been identified from initial interviews and the *Contractor Day* the more detailed compatibility analysis can be undertaken regarding the potential partners ability to meet the specific requirements defined by the key criteria as identified in Stage 1, Step 3.
- Undertake *Company Audit* which should look at people factors and organisational capability respectively.
- Aspects initially looked at such as past performance and track records should also be investigated in more detail.

3

- The collected data from both stages can then be compared and the most suitable partner determined. All data received from the assessment of potential partners should be added to the company data base for future reference.

4

- Both companies must be satisfied that the long term objectives are not contradictory and that a win-win scenario can be developed. Misconceptions at this stage could result in a costly partnership affording few mutual benefits.
- The main strategic objectives for both companies should be agreed, and recommendations regarding procurement, contract forms and standards, provided.
- Main objectives should be semi formalised in a joint mission statement outlining the expectations of the partnership which will act as guidelines for the development of the particular Strategic Partnership agreement

5

Developing the Relationship

Establishing Teams & Methodology

	INPUTS	ACTIVITY	TOOLS/TECHNIQUES
①	● Representative client staff ● Representative contractor staff ● Suitable & compatible staff	Establish Long Term Strategic Partnering Team	■ Workshops(s) facilitator if required ■ Team building
②	● Joint Partnering Team ● Design organisation if applicable/available	Identify Improvement Areas	■ Workshops ■ Discussion groups
③	● Identify specific business drivers ● Agree team responsibilities ● Performance measurement tools ● Communications & IT systems	Plan Projects Strategy	■ Workshops ■ Meetings ■ Brainstorming
④	● Commitment to Partnership at all levels by all parties	Sign Long Term Charter	■ Build in flexibility
⑤	● Immediate implementation of agreed methodology ● Commencement of improvement initiatives	Begin Construction Projects	■ Utilise agreed tools and techniques

DETAILS

- The Long Term Strategic Partnering team (LTSP) consists of representatives from client and contractor organisations
- The number and size of such teams will depend upon the nature of the partnership and the scale and type of work to be undertaken
- The LTSP team will consist of joint skills and experiences and will have an accurate understanding of client needs and be able to respond quickly to change
- This team should be in place for the duration of the arrangement and will represent the final management tier in the partnering hierarchy

1

- The LTSP will further develop the areas for improvements as outlined in Stage 2, using expertise from both client and contractor organisations
- Decisions made in this step will greatly influence the development of project teams and strategy
- The advice of design consultants will be of great use at this stage

2

- A preferred strategy can be developed for future projects of similar type, which will outline the proposed process for project implementation
- The strategy will require agreement upon the most suitable type of project organisations, desired responsibilities and choice standard tools and techniques
- The strategy will undergo review and modification as part of the continuous improvement programme
- A major consideration when selecting project organisations (Project Process Stage 2) is their ability to satisfy the requirements demanded by the initial strategy developed here

3

- The initial strategy for the implementation and control of the partnership describes the aims and objectives of the venture, the structure of the partnership, team objectives, roles and responsibilities, success measures and the main tools and techniques to be utilised.
- The teams should commit to this by signing an agreement. This constitutes the *Strategic Charter* to which the project specific partnering, undertaken by the collaborating companies, will adhere to
- It is important to build in flexibility to the charter to enable any modifications to be made

4

- Once the *Strategic Charter* is signed the construction projects can begin. Implementation of the Project Specific Process can commence. (Refer to Project Specific Process)
- Agreed tools and techniques should be implemented
- Improvement initiatives/ programmes can be commenced

5

Managing & Monitoring the Partnership

Continual Assessment & Problem Identification

	INPUTS	ACTIVITY	TOOLS/TECHNIQUES
①	● Champions ● Performance - Team satisfaction	<pre> graph TD A[Obtain Feedback] --> B[Identify Problems] B --> C[Problem Resolution] C --> D[Update QA] D --> E[Continue Monitoring] </pre> Obtain Feedback	■ Assessment forms ■ Reports ■ Discussion groups ■ Questionnaires
②	● Feedback ● Process assessment	Identify Problems	■ Results Vs objectives ■ Discussion groups ■ Paired comparison ■ Priority list
③	● Appropriate problem solving team ● Suitable resolution method ● Knowledge & experience ● Clearly defined action plan	Problem Resolution	■ Define & measure ■ Brain storming ■ Monitoring procedures ■ Agreed CIP tools
④	● Validated procedure ● Flexible Quality management System	Update QA	■ modify procedures and charters ■ New / modified tools & techniques - New resources - New roles & responsibilities
⑤	● Measurement data ● Lessons learnt ● Reports/ meetings at agreed intervals	Continue Monitoring	■ Feedback procedures ■ Measurement procedures

DETAILS

- The strategic relationship should be regularly monitored using criteria established for Partnering and CIP to make sure that the core teams are working within the policy as agreed in the *Strategic Charter*
- The effectiveness of communication to and from senior management level should be assessed as should the effectiveness of primary teams in championing the partnering policy and setting up new teams
- A comparative assessment of performance over a number of projects will provide clear indication of progress. Partnering relationships developed with other organisations, which might impact upon the efficiency of the strategic partnership, should also be assessed

1

- At strategic level the collaborating parties need to be concerned with overall performance and especially problems that could not be resolved by project teams.
- The efficiency of feedback of project information is also critical to the process and must be closely monitored. [Ref. operational model]. In an effectively operated strategic partnering environment performance data on the following should be readily available: Cost, time, number of defects, client satisfaction with quality, number of disputes, effectiveness of problem resolution procedures, safety, improvements and innovations, participant satisfaction

2

- When problems manifest themselves the cause must be identified and an action plan must be agreed. The types of problems that might manifest themselves at this level are poorly functioning primary teams, poor championing of the policy, political / social change or a problem that could not be solved at project specific level and has been passed up to senior management for resolution.
- The development of the action plan should draw on the experience of all concerned and in such circumstances there is a need for close integration between strategic and project level teams in order to identify the most appropriate solution.
- The action plan will be implemented and an agreed period should be allowed in which to monitor and measure any improvements.

3

- Successful problem resolution might lead to the development of new tools or techniques or the requirement of additional roles and responsibilities. These should be assessed for use elsewhere and standardisation considered.
- In some circumstances the charter will need to be revised if there have been modifications to procedures that affect the objectives of either partner, the responsibilities of teams or other agreed charter criteria.
- Any revisions must have the agreement of senior management as well as the technical staff concerned. This reinforces the need for collective agreement and is why the initial policy must be developed with respect to the requirements of all disciplines and participants and not solely senior management.

4

- Monitoring should be undertaken at regular intervals and will be an on-going sub process. The relationship with project level activities is crucial and particular attention must be paid to the accuracy and timeliness of information concerning performance and improvements.
- Tools and techniques will vary, however it is important not to 'man mark' or to create an oppressive environment. The emphasis is on team working and team effectiveness should be monitored.

5

Review

Review of Overall Partnering Policy

	INPUTS	ACTIVITY	TOOLS/TECHNIQUES
①	● Data from principle team reviews ● Success of relationships ● Success of supply chain partnering	Assess Charter Success	■ Regular reviews 6 or 12 months ■ Reports ■ Discussion groups
②	● Feedback of project performance ● Performance of improvement programmes	Assess Improvement Programmes	■ CIP measurement regarding - - time - cost - quality - innovation ■ Project comparison
③	● Potential improvements ● Modified procedures / processes	Identify lessons learn't	■ Process mapping ■ Discussion groups ■ Final workshop
④	● Incentives ● Partnering policy document	Consider Continuation	■ Undertake Stage 1 & 2 to ensure compatibility ■ Level of requirements change
⑤	● Lessons learn't ● Identified improvements ● Visions and expectations	Update Partnering Strategy	■ Develop new charter ■ Database for learning

DETAILS

■ The *Strategic Charter* should be referred in order to compare final results with the initial objectives. The client and contractor will be able to assess if the gains have outweighed the costs. The two companies should also look at the level of compatibility between them

■ Also the outcomes of the projects that have been completed under the partnership must be compared. Have they met the agreed requirements and has there been any progressive improvements from project to project? This will be more easy to assess when projects are of similar types where improvements and innovations have been utilised on subsequent projects. Generally projects will be measured on the criteria developed in Stage 4

1

■ The success of the improvement programmes is of importance when assessing the success of the partnership.

■ The ability of the contractor to introduce improvements into the projects through collaboration with other organisations will be an important factor in the clients decision to extend the partnership.

■ Any shortcomings in the improvement programme should be identified and the potential for further improvements assessed

2

■ Irrespective of if partnering will continue, the companies should identify lessons learnt from the partnering experience and how they might improve in the future. Findings should be submitted to a data base for future reference.

■ All aspects of the partnering should be assessed, ranging from the improvement programme used, as well as communication and management effectiveness. Findings can be used to develop an improved strategy for future partnering

3

■ After the review steps both companies will know whether the partnership was successful or not and should have a good idea whether or not to continue with the collaboration.

■ Both companies must ask themselves why they would want to partner again.

■ Requirements often change over time and there might be a more suitable company to partner with if needs have changed.

■ It is recommended to undertake the procedures outlined in Stage 1-2 in order to assess the current level of compatibility, from which a decision can be made

4

■ If the partnership is to be extended the suggested improvements to the partnering strategy must be applied.

■ Care must be taken when entering into another long term phase as this is when the partnering can become taken for granted.

■ Cosy relationships are to be avoided and the partnering must be developed and managed as though it were the first.

■ Therefore it is recommended that the LTSP process stages are repeated to ensure the Partnering is undertaken with commitment from both parties.

5

Process Explanation
Project Specific Partnering

Develop Project Strategy

Identifying Project Objectives and Management Procedures

	INPUTS	ACTIVITY	TOOLS/TECHNIQUES
1	● Long term strategic partnering team ● Project facets	Select Partner Organisation If Client has more than one	■ Industry rankings ■ Benchmarks ■ Analysis of previous relationship
2	● LTSP Team ● Policy document ● Required improvement areas	Identify Project Requirements	■ Discussion groups ■ Assessment of needs
3	● Procedures in Strategic Process Stage 3 step 2& 3 ● Partner information management and QA procedures	Establish Management Procedures	■ Assessment of compatibility ■ Discussion groups
4	● Formality of agreement between main partners ● Time, cost, quality requirements	Identify Suitable Procurement	■ Discussion groups ■ Precedence
5	● Mission statement ● Commitment to main objectives and procedures	Agree Upon Project Objectives	■ Discussion groups

DETAILS

- If the client has developed an LTSP with a company they can immediately begin the process of identifying requirements. If the clients has several long term partners, the appropriate organisation for the particular project type should be utilised, the choice of which will be obvious if a rigorous process of developing the LTSP was undertaken.
- In the situation where there is no long term partner, selection of a project partner will be required. This should follow the selection protocol as outlined in Stage 2. The project and client however will not benefit from the advantages of the LTSP.
- When the client thinks there is a need for the project, the pre- project team specified in the long term strategy should be assembled.

1

- Experienced clients will have a good idea of what they want. However the contractor being in place at this pre-project phase allows for the client ideas to immediately receive expert feedback from the contractor. Together they can develop an 'outline strategy' for the project regarding building type (standard, traditional or innovative, refer to Laham 1994, Table 3), function, time scale, preliminary budget and risk

2

- The management procedures to be utilised on the project need to be determined as early as possible. The long term strategy will have recommended an approach in Stage 3 Step2-3, where Long term CIP strategy is developed.
- The project should be managed in a way that is compatible with long term CIP requirements. It is therefore important that agreed procedures for selection, allocation of tasks and responsibilities, performance assessment and the management of information are standard on all specific projects within any long term arrangement.
- Flexibility should be inherent to the approach to allow for the adoption of any proven improvements regarding tools techniques and procedures.

3

- When a LTSP frame work is in place there is the opportunity for contract form and procurement type to be considered at an earlier stage in the process, which will be inextricably linked with the partnering approach decided in the LTSP, regarding formality of the arrangement and risk allocation. Where great trust and confidence exist there is opportunity for a vast reduction in contract documentation
- Agreement on how teams will share in success and how organisations will be paid must be obtained. A strategy for this will have been developed in the LTSP but will need further consideration depending on the detail of the specific project. Successful approaches have been based around the removal of incentives for unnecessary cost reduction on the project.

4

- Once the above steps have been completed a list of main objectives can be compiled.
- Foreseen problems with the main objectives and or management procedures should be resolved before this stage. A mission statement outlining the initial requirements and intended strategy's should be drafted when agreement has been reached.

5

Project Team Selection

Rigorous selection of capable and compatible companies at an early stage

	INPUTS	ACTIVITY	TOOLS/TECHNIQUES
①	● Company reputation ● Project strategy	Identify and Brief Organisations	■ Industry rankings ■ Company data base ■ Previous relationships / existing strategic alliances
②	● LTSP Team ● Design requirements ● Management requirements	Select Design Principle <i>Creation of Project Steering Group</i>	■ Assessment & selection procedures ■ Identify suitable partnering champions
③	● Project Steering group	Select Core Consultants <i>Creation of Project Partnering Team</i>	■ Assessment & selection procedures ■ Identify suitable partnering champions
④	● Project Partnering Team ● Long term strategy	Establish selection protocol for WP selection	■ Project workshop
⑤	● Project Partnering Team	Select Work Package Organisations	■ Assessment & selection procedures ■ Identify suitable partnering champions

DETAILS

- An organisation might be efficient at undertaking the design and construction tasks required of them on the project, but might make a poor partner, short term or long term. The selection procedure is there to identify these two aspects, firstly the capability of the organisation but also the philosophy of management and personnel as well.
- The intention should be to appoint companies that can successfully integrate into the virtual project organisation that has been designed by the LTSP. The LTSP requires the development of relationships throughout the supply chain and consequently initial selection is important in identifying organisations that are both willing and able to adhere to such requirements.

1

- The partnering strategy will enable a '*Project Steering Group*' to be setup at brief development stage, consisting of client, contractor and lead design consultant, normally the architect. The organisation appointed for this role should act as Design Manager [Ref. Latham (TTT 4.1)], (although this may not be for the whole process).
- Design and production are integrated and subsequent decisions and therefore responsibilities should be taken by both parties. This requires the contractor and design organisation to work closely together and effective selection is vital. The contractor must be as certain as possible that the organisations will gel as well as being assured that the design organisation possesses management skills appropriate for the required tasks.

2

- On Projects which require a high input from specialised organisations, the management team should select the specific organisations as early as possible so that they can be made aware of procedures and practices at an early stage. Such key organisations along with key representatives from design and main contractor organisations will constitute the '*Project Partnering Team*'.
- The project partnering team should if possible have a team of representatives from core companies physically working together, however this will depend upon the size and complexity of the project at hand. On less complex projects a virtual project partnering team could suffice, however frequent meetings, will be required to maintain momentum of the partnering policy

3

- When establishing the project partnering team, the supply chain responsibilities should be considered regarding who should select and manage suppliers in accordance with the partnering policy. Representatives from organisations will need to be integrated in order to undertake particular work packages, and partnering champions will need to be in place to ensure tools and techniques are utilised and that information is being effectively gathered and communicated in accordance with the project partnering strategy.
- A plan for the responsibilities of project organisations regarding selection and management of subordinate organisations can be mapped out in the long term strategy and specifics agreed upon at the project workshop

4

- The selection of less permanent work package organisations will be ongoing throughout the project and it is critical that such organisations are rigorously selected to ensure the partnering procedures are utilised at operational level. Partnering champions should monitor the partnering policy at each workpackage and organisations recruited should be encouraged to extend the partnering philosophy to their suppliers and subordinates.
- Roles and responsibilities of WP organisations can be developed in the LTSP policy and agreed by selected organisations at the Project / WP Workshop

5

Project Team Building

Team and Strategy Development

	INPUTS	ACTIVITY	TOOLS/TECHNIQUES
1	● Project Charter ● Project Partnering team ● Agreed objectives ● Risk allocated ● CIP areas agreed	Review & Commit to Project Strategy	■ Project workshop
2	● Identified partnering champions ● CIP strategy	Determine Main Work Package Teams	■ Project workshop ■ Physical / virtual teams as required ■ Compatibility assessment of personnel
3	● Project partnering team ● Work Package Team ● CIP strategy	Develop Work Package Strategy	■ Work Package workshop ■ Seek agreement on - CIP, estimates, programme, incentive & reward schemes ■ Ensure familiarity with procedures & tools
4	● Project Partnering Team ● Work Package Team	Determine Roles and Responsibilities <i>Creation of Problem Solving Teams</i>	■ Work Package workshop
5	● Work Package Team	Review & Commit to WP Strategy	■ Work Package workshop ■ Work Package Charter

Activities running concurrently with Stage 2

DETAILS

- The project objectives and procedures agreed by Client and Contractor in Stage 1 need to be understood and agreed to by the other key project organisations. This can be undertaken effectively at the Project Workshop where team building exercises can be undertaken and feedback obtained.
- Approaches to workshops differ (in length and formality) however organisations should commit to the project strategy by signing a Project Charter which outlines the main goals and explains what is required of organisations regarding performance and behaviour.

1

- After the project workshop the strategic team will have obtained feedback concerning the proposed work packages. The next step is to form specific teams for each one.
- The size and number of such teams will depend upon the project type, however each should have a Partnering Champion in place with the responsibility for developing and managing the partnering, regarding adherence to Charters within his/her remit and ensuring effective feedback of information to superiors and subordinates
- The team must be capable of adhering to partnering requirements and achieving improvement objectives described by the CIP strategy

2

- The partnering champion will lead the WP team in developing a specific strategy for the work package in accordance with the requirements of the overall project partnering strategy. The team will develop specific ways to improve and innovate in areas determined by the Partnering Policy and will have the opportunity to devise their own methods for achieving the broader requirements. This can be undertaken effectively at a *Work Package workshop*
- The effective champion will develop a team with a clear idea of what they are trying to achieve. It is at this level that the broadest range of disciplines and organisations are expected to work together and the successful development of this team is crucial to the effectiveness of the whole partnering policy.

3

- Once the core WP team is in place the respective organisational team leaders must allocate responsibilities to their internal staff. They become in essence the next tier of partnering champions although their role is more to disseminate partnering attitudes and expectations within their respective companies rather than to perform the more facilitating role of the champion in Step 3.
- The particular manager here should convey the agreed strategy to staff and assemble representatives who will form part of a problem solving team. Respective representatives from different organisations can then come together at Work Package Workshops, to address particular project problems

4

- In order for individuals to integrate effectively into the team they should be given the opportunity to review the strategy developed in Step 3 and ensure the roles and responsibilities in Step 4 are agreeable
- Individuals will be able to comment on the strategies developed at the WP Workshop. Obviously major changes to work package strategy will not be frequently made at this stage however the overall partnering should have in built flexibility and adaptability.
- Individuals should show their commitment by signing WP charters which will take the form of the project charters focusing on the specifics of the package.

5

Management & Control

Continually check results with objectives

	INPUTS	ACTIVITY	TOOLS/TECHNIQUES
①	● Performance data ● Team leaders ● Independent assessors as required	<pre> graph TD S1[1. Undertake Performance Reviews] --> S2[2. Measure & Define Problems] S2 --> S3[3. Organise & Implement Action Plan] S3 --> S4[4. Incorporate Improvements] S4 --> S5[5. Return to Step 1 Continual Improvement] </pre> Undertake Performance Reviews	■ Assess technical & managerial aspects of CIP progress ■ Action reports ■ Feedback questionnaires ■ Discussion groups
②	● Problem Solving Teams ● Performance data	Measure & Define Problems	■ Define problem -Flow charts -Pareto analysis ■ Discussion groups ■ Brainstorming
③	● Problem Solving Team ● Proposed solutions	Organise & Implement Action Plan	■ Priority lists ■ Quick fixes ■ Major fixes ■ Monitor change ■ Measure success
④	● Authorised Team leaders / champions ● New procedures ● Update QA	Incorporate Improvements	■ Change control ■ Add to database
⑤	● Frequent reviews ● Company strategy: - Long term goals - Key success factors ● Visions and expectations	Return to Step 1 Continual Improvement	■ Consider longer term efficiency of improvements ■ On going analysis

DETAILS

- The CIP strategy will have outlined the areas to which the partnering is committed to improving and particular performance measurement and feedback tools will have been agreed in the WP Workshops
- The use of independent assessors will be required for certain activities
- As well as monitoring particular activities the partnering 'system' should be monitored to investigate how well people are adhering to the Charters, whether teams are communicating effectively and if the partnering culture is being maintained

1

- Some problems regarding performance or Charter compliance will inevitably occur and the relevant *Problem Solving Team* should be assembled immediately depending on the nature and level of the problem
- Problems should be addressed at the lowest management level to begin with and likely causes can be identified using such techniques as brainstorming and cause and effect diagrams
- Once the problem has been identified it can be analysed further to identify where attention should be placed for the development of a more detailed action plan

2

- The *Problem Solving Team* should develop an action plan for problem resolution.
- A priority list along with a "Paired comparison scheme" can be developed in order to prioritise and Issues should be addressed only for the agreed length of time
- Quick fixes for low cost items can be implemented first followed by major items, which might require process change and higher costs, as and when required
- All changes should be introduced in a controlled manner for example with the use of a change control form
- Unsolved problems will need to be passed onto more senior management after an agreed period

3

- Successful solutions should be standardised for future use. Indeed it could be useful to log the priority list and the results of implementation in a database for future reference and analysis
- Successful tools and techniques can be included as recommended tools on the next project and the appropriate modifications to the LTSP policy should be made (Standardisation across different projects is important for facilitating effective comparison of projects, Ref LTSP Stage 4)

4

- The on going procedure described above represents the core of the continuous improvement process (Ref diagram)
- Such techniques can be used to help ensure the success of specific CIP areas as well as help overcome unexpected problems

5

Review

Assess Performance and Learn Lessons

	INPUTS	ACTIVITY	TOOLS/TECHNIQUES
①	● Project Charter ● Feedback from Partnering Champions ● Performance data	Review Project Charter	■ Compare project outcomes with objectives - time - cost - quality ■ Determine success of partner integration
②	● Work Package Charters ● Feedback from team leaders / Partnering Champions	Review Work Package Charters	■ Compare project outcomes with objectives - improvements - innovation - level of supply chain partnering ■ Discussion groups
③	● Lessons learnt ● Improvements to policy & strategy ● CIP improvements	Refine Long Term Strategy	■ Discussion groups ■ Update partnering policy and strategy
④	● All partnering companies	Celebrate Project Completion	■ Dinners / events ■ Rewards & awards
⑤	● Development of supply chain partnerships ● Key organisations - consultants - specialist contractors	Develop New Project Partners	■ Undertake assessment outlined in Stage 2

DETAILS

- The overall Project Charter needs to be reviewed on completion and objectives compared with results such as the main criteria of time and cost
- Reports from partnering champions must be assessed regarding quality and the implementation of problem solving techniques
- The degree to which companies successfully integrated and the effectiveness of team working must also be investigated

1

- More detailed analysis of the project will come from the Work Package Team especially the work package champions who are responsible for the collection of data regarding the specific project areas such as innovation and development of new techniques
- The embracement of the partnering approach by subordinate organisations should also be assessed

2

- For any improvements to be effectively utilised on subsequent projects the lessons learnt must be included in the long term strategy for utilisation in Stage 1 of any new project.
- Major changes might require a change to the LTSP Charter hence the need for flexibility.

3

- Bonuses and incentive schemes need to be honoured and the project should end in a positive fashion with teams sharing in success.
- It is important to finish the project the way that it was carried out i.e. positive 'work can be fun approach' and some form of event(s) or dinner(s) should be organised
- In many cases it is not the end of the working relationships of many and in the spirit of true partnership organisations will work together again in the future

4

- The client and contracting organisation will be searching for possible additional partners and the experience gained of organisations throughout the duration of the project will be useful when deciding on long term partners or future project partners
- Cosy relationships should be avoided however and the formal procedures of selection should always be utilised

5

APPENDIX 2: SUPPORTING RESEARCH DATA

Appendix 2 Contents

- Contractors Questionnaire Data
- Mini case notes
- Amec case notes
- Amec Questionnaire Data
- Amec workshop presentation
- Bovis case notes
- Partnering Papers authored or co-authored
- Partnering Presentation “Adversaries of Partners”

Note: Appendix 2 files can be found on accompanying CD.

