

**CITB-ConstructionSkills action learning  
Project – Supply Chain Integration, logistics  
and e-trading**

# Interserve Project Services Supply Chain Development

May 2006

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## Executive Summary

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This report presents the results of a CITB-ConstructionSkills Special Measures Project focused on developing integrated construction supply chains. The work was undertaken between January 2004 and December 2005 and involved the support of Interserve Project Services and their framework supply chain partners. It builds upon the findings of Interserve's 'Integrating the Supply Chain – Project Report', September 2004, sponsored by CITB ConstructionSkills.

The purpose of the report is to:

- Review the project's activities and achievements
- Identify supply chain issues
- Suggest actions to improve supply chains to contractors.

The report is aimed at all those stakeholders, particularly contractors, interested in developing a better, more productive and profitable construction industry.

The results are based on the project's work with Interserve Project Services framework supply chains including NHS Procure 21, British Telecommunications PLC, Leicester County Council's Alliance, Department for Work and Pensions, Somerfield PLC, and the company's West Midlands Region. The project's activities included a wide ranging series of facilitated supply chain workshops and specific consultant assignments.

The report is divided into three parts. The first part provides background information to the project. In this section the context of the project is explained and the activities undertaken.

The second section provides six case studies providing a sample of the project's activities and outcomes. The case studies include regional, framework and project supply chain activities, a review of a client's intervention strategies in a national supply chain and an explanation of how project 'extranets' have been used.

Finally, current supply chain issues are identified and actions for contractors suggested. The supply chain issues and suggested actions for contractors are categorised under five key supply chain development areas:

- Contractor's leadership
- Contracting strategies and policies
- People and organisational culture
- Supply chain partnerships
- Business processes.

Significant progress has been made over the last seven years by the construction industry in improving supply chains. The challenge is now to continue the development process in what is likely to be a shrinking, rather than expanding, construction market.

Successful construction supply chains require a whole industry and whole business approach to developing closer working relationships. It requires increasingly integrated partnership between clients, contractors and suppliers and the support of professional institutions, trade associations, education, training and funding providers, government departments and agencies. Strong leadership will be required to develop the level of openness and trust required in areas where there has been suspicion in the past.

The report provides examples of some aspects of current supply chain best practice. It aims to provide contractors with ideas and activities that they can adapt to assist in developing their own supply chains. Developing high performance supply chains in construction, similar to those found in the manufacturing and retail sectors, is possible. It will require clients and contractors to continue to invest time and resources in developing better processes and closer working relationships.

# 1. Introduction to the Project

## INTRODUCTION

### The purpose of the report

- 1.1 The aim of this report is to present the lessons learnt from Interserve Project Services' Supply Chain Development Project. The report is presented in a form to be useful to others in the construction industry interested in developing integrated supply chains, particularly main contractors and project managers.

Interserve Project Services Limited
<p>Interserve Project Services Limited delivers whole life solutions through business case, design, procurement, construction and maintenance in property and infrastructure management - often working with sister Interserve businesses to provide a one stop shop.</p> <p>Operations reach throughout the UK and Middle East via a network of twenty four offices and a workforce of over 2,000 in the UK alone. Annual turnover is in excess of £500 million.</p> <p>The company provides:</p> <ul style="list-style-type: none"><li>• a customer driven service, with the focus firmly on client needs</li><li>• a partnership culture founded on mutual trust and support</li><li>• high calibre people, with integrity of purpose and an open approach</li><li>• certainty of delivery</li><li>• commitment to safety and sustainability</li><li>• innovation and creativity</li><li>• added value through partnership.</li></ul> <p>The ability to manage projects holistically and service them throughout their life is the key strategy. Skills such as risk and value management, whole life costing and supply chain integration are at the top of today's agenda and are essential elements in the complete package of services on offer.</p> <p>The company's aim is to enhance clients' own operations - thus providing added value for the long term.</p>

- 1.2 The project was sponsored by CITB-ConstructionSkills and is part of a wider industry research project to support the development of integrated supply chains in the construction industry. For further information on the other projects refer to [www.constructingexcellence.org.uk](http://www.constructingexcellence.org.uk).

### The project's aim and objectives

- 1.3 The aim of Interserve's project was to improve framework supply chains at the second and third tier levels. The specific objectives were that by the end of the project the team should have:
- Worked with the NHS Procure 21 Framework (including two project supply chains), and the BT Telereal Framework Team.
  - Identified supply chain issues and improvement opportunities at second and third tier levels
  - Developed strategies and practical techniques to involve the supply chain in resolving the issues and improving performance
  - Measured the qualitative and quantitative improvements

- Analysed the critical success factor and written these in a form suitable for dissemination to the wider supply chain and industry
- Trained internal facilitators in continuing the delivery and development of this work.

### **Project scope**

- 1.4 The scope of this project was limited to the work of Interserve and its supply chains. Most of the research was focused on modern contracting arrangements involving long-term client-contractor relationships.

### **Report structure**

- 1.5 The report is divided into three sections. This, the 'Introduction to the Project' section, explains the background to the project and its activities. The next section provides six case studies from the project's activities that illustrate a number of useful lessons for developing contractor's supply chains. The final section describes the issues that need to be resolved against a suggested supply chain development framework. Actions are suggested to help improve a contractor's supply chain performance alongside each issue.
- 1.6 Three appendices have been included. Appendices 1 and 2 are designed to assist readers who may be new to supply chain development. Appendix 1 provides an explanation of some of the supply jargon the reader is likely to encounter. Appendix 2 gives a list of resources the reader may find useful to further their knowledge and understanding related to construction supply chains. Appendix 3 is Team Health Check Tool to allow a supply chain team to monitor its members' perception of the team's health.
- 1.7 The suggested actions are those of the consultant and do not necessarily represent those of Interserve Project Services or its supply chain partners.

## **PROJECT BACKGROUND**

### **Interserve's business strategy**

- 1.8 Interserve Project Services Limited took the strategic decision in the late 1990's to undertake the majority of its construction activity through framework contracts. The company built up expertise in developing its supply chains with central government departments and blue chip clients. More information on the company's activities can be found by visiting its website: [www.interserveplc.co.uk](http://www.interserveplc.co.uk)

#### **Integrating the Supply Chain – Phase 1 Report**

The report presented the results of a CITB Special Measures Project focused on developing integrated construction supply chains. The work was undertaken between May 2002 and June 2003 and involved the support of Interserve Project Services and their framework supply chain partners.

The research found that a great deal of progress has been made over the last five years by the construction industry in developing integrated supply chains particularly at first tier level. The challenge was to continue the development process down through the supply chain into the SMEs. In the case of long-term framework agreements there was a real opportunity to achieve the goal of a fully integrated supply chain and integrated project teams in the medium to long term.

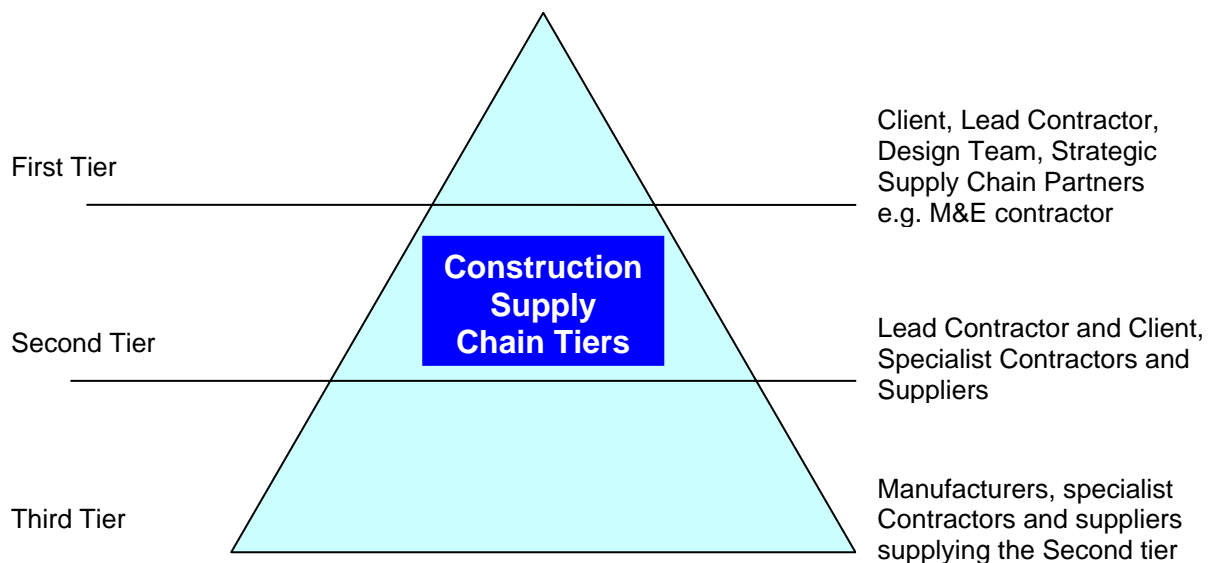
The report concluded that focusing on supply chain management and logistics in isolation will not work. It requires a whole industry approach to provide existing and new construction personnel - particularly those working in SMEs - with the management knowledge and skills necessary to support a fully integrated supply chain. To achieve this will require a new level of partnership between clients and employers and their organisations, professional institutions, trade associations, education, training and funding providers, government departments and agencies. Strong leadership will be required to develop the level of openness and trust required in areas where there has been suspicion in the past.

## **Research and development**



- 1.9 This report builds upon the findings of an earlier phase 1 project report entitled 'Integrating the supply chain' published in 2003 which focused on developing the first tier in the supply chain. It was from this starting point that the project team worked to develop the supply chain at second and third tier levels. Fundamental to the success of any project or framework was the team's belief that the contractor is only as good as its supply chain. The construction supply tiers are illustrated in Figure 1.

**Figure 1: Construction supply chain tiers**



### **Project partners**

- 1.10 The project built on the lessons from the first phase. Due to Interserve's success in winning framework contracts the number of project partners expanded steadily through the life of the project. By the end of the project Interserve's supply chain project partners included:

- NHS Procure 21
- BT Telereal
- Department of Work and Pensions (DWP)
- Somerfield
- Leicestershire County Council.
- AMEC
- Interserve Project Services
- Interserve Health
- Specialist contractors
- Specialist suppliers
- Specialist designers
- CITB-ConstructionSkills National Construction College

### **Interserve's supply chains**

- 1.11 Interserve has worked hard at rationalising its supply chain and developing a company-wide database. In reality the company has many different supply chains due to the wide variety of construction work undertaken by the company and its geographical spread. These supply chains are associated with specific business areas and framework arrangements. The project used a bottom-up approach to supply chain development, working with second and third tier suppliers on specific projects and framework contracts and within business units.

## PROJECT SUPPLY CHAIN ACTIVITIES

### Introduction to the activities

- 1.12 The project involved a wide range of integration activities between February 2004 and December 2005 involving some 275 people and 74 different supply chain partners. The partners and activities expanded over the project period from the original BT and NHS Procure 21 Frameworks to include the Department for Work and Pensions, Somerfield and Leicestershire County Council supply chains. The specific activities are listed and described in Table 1.

**Table 1: The project's supply chain activities**

Supply Chain Framework	Activity	Date
BT Framework	BT Wholesale Refurbishment of Faraday House, London, Supply Chain Integration Partnering Workshop.	10 February 2004
BT Framework	BT Wholesale Refurbishment of Faraday House, London, Supply Chain Partners (AMEC & IPSL) Review Workshop.	8 September 2004
DWP Framework	JobCentre Plus 2003/4 Supply Chain Integration Partnering Review Workshop.	1 April 2004
DWP Framework	JobCentre Plus 2003/4 Supply Chain Integration Partnering Scottish Roll Out Workshop.	26 August 2004
DWP Framework	JobCentre Plus 2003/4 Supply Chain Integration Partnering North West Roll Out Workshop.	27 September 2004
NHS Procure 21	Sandwell Hospital, Supply Chain Integration Partnering Workshop.	27 May 2004
NHS Procure 21	Value and Partnering Workshop, St Georges Hospital, Stafford	11 February 2005
IPSL West Midlands Region's Supply Chain	Regional Supply Chain Workshop	12 August 2004
Leicester County Council's Strategic Alliance Value	Risk and Partnering Workshop, Hinckley Special School.	2 February 2005
Interserve Supply Chain Management Strategic Steering Group Meeting	Briefing to Interserve's Supply Chain Management Strategic Steering Group on the lessons learnt from the project.	28 June 2005
Somerfield Framework	Review of the Somerfield Supply Chain with recommendations for productivity and profitability improvements.	August – December 2005
Integrated supply chain supervisors programme	Development of an Interserve supply chain supervisors' training programme covering management and technology topics scheduled to commence in Autumn 2006. The programme will lead to an NVQ Level 3 award in Construction Site Supervision and a Construction Skills Certification Scheme 'competent supervisor' gold card. The programme will be open to Interserve's supervisors and those from suppliers. In addition to developing supervisors' knowledge and skills the programme will also be used to develop supply chain teams.	September – December 2005

## 2. Case Studies

### INTRODUCTION

- 2.1 This section contains five case studies that illustrate how Interserve and its supply chain partners have tackled some of the supply chain issues being faced by contractors at all levels.
- 2.2 The case studies are:

#### Case Study 1 – Interserve’s Contracting Strategies and Policies

*This case study provides a good example of how a main contractor has demonstrated leadership in developing a clear contracting strategy and policy.*

#### Case Study 2 – Interserve’s West Midlands Supply Chain Forum

*This case study illustrates how a supply chain can be developed by a main contractor taking the lead and working in partnership with its supply chain partners.*

#### Case Study 3 – The Department for Work and Pensions Framework

*This case study illustrates how a client’s involvement can improve supply chain performance. It also shows developing a close relationship between supply chain members can deliver productivity gains.*

#### Case Study 4 – Somerfield Stores Framework

*This case study illustrates how an informed and progressive client can work effectively with forward looking contractors and their supply chains.*

#### Case Study 5 – NHS Procure 21 Sandwell Hospital Cluster Group

*This case study illustrates how a main contractor working with a group (cluster) of specialist contractors focused on a particular building element can improve project productivity.*

#### Case Study 6 – BIW Extranet.

*The final case study reviews how a project ‘Extranet’ can assist project communications. This case study is based upon the BIW Extranet system used by Interserve on many of its larger projects and some framework contracts.*

## CASE STUDY 1 – INTERSERVE’S CONTRACTING STRATEGIES AND POLICIES

### Introduction

- 2.3 This case study provides a good example of how a main contractor has shown leadership and developed a clear contracting strategy and policy.
- 2.4 Interserve Project Services has recently reviewed its contracting strategies and policies to reflect how the company implements its mission and vision.

### The company’s responsibilities

- 2.5 Figure 2 illustrates the company’s strategic responsibilities and stakeholders and how these are linked to its values, culture, policies and strategy. Further information can be found at <http://www.interserveplc.co.uk/Images/strategy.pdf>.

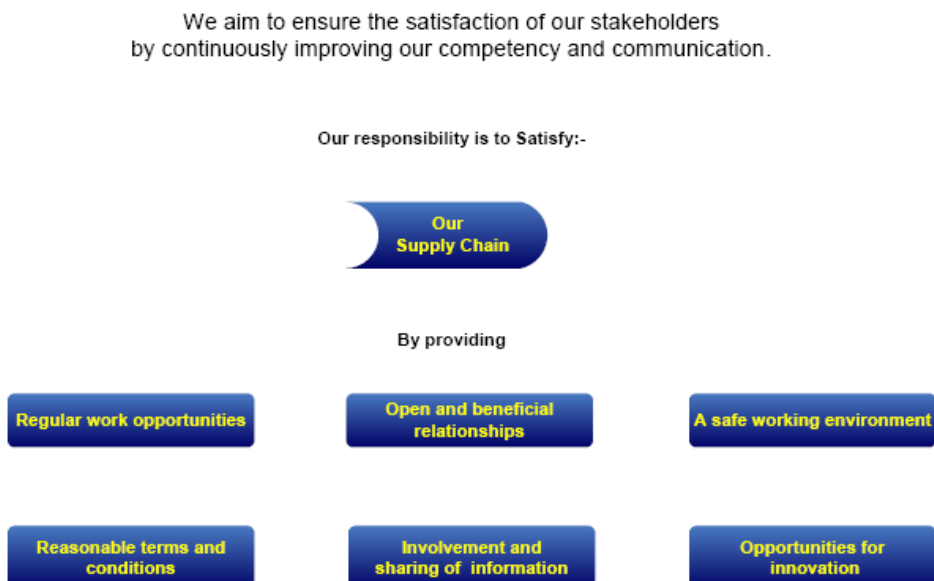
Figure 2: Interserve’s strategic responsibilities



### Working with the supply chain

- 2.6 The company has clearly defined how it wishes to work with its supply chain, as shown in Figure 3.

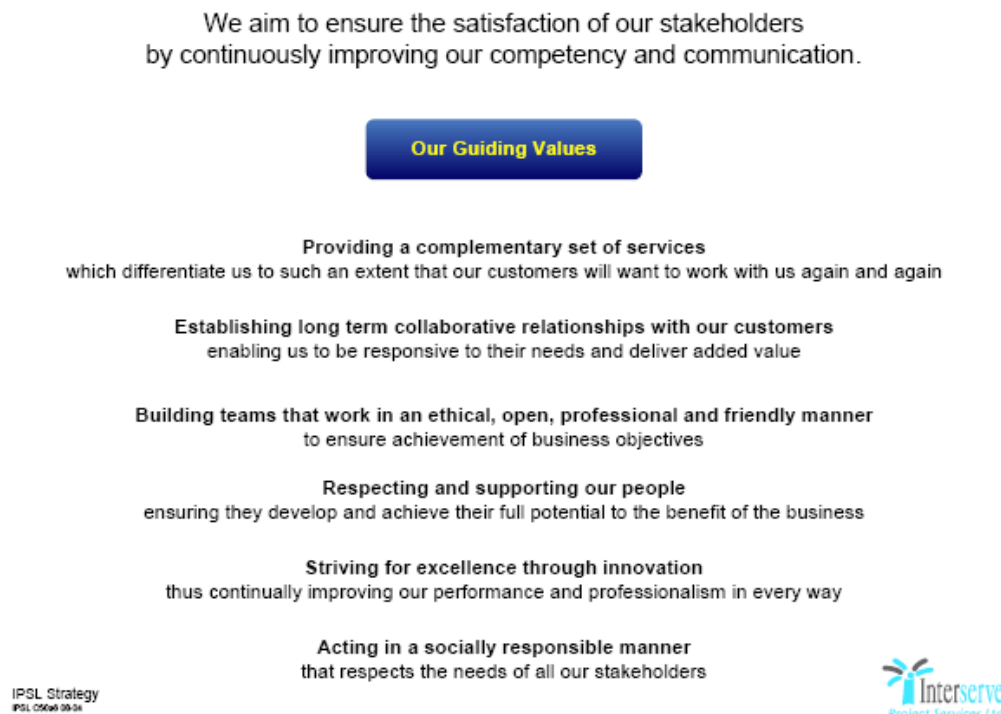
Figure 3: Interserve’s approach to its supply chain



## Guiding Values

2.7 The company has set out its guiding values for the way in which it wishes to conduct its business, as shown in Figure 4.

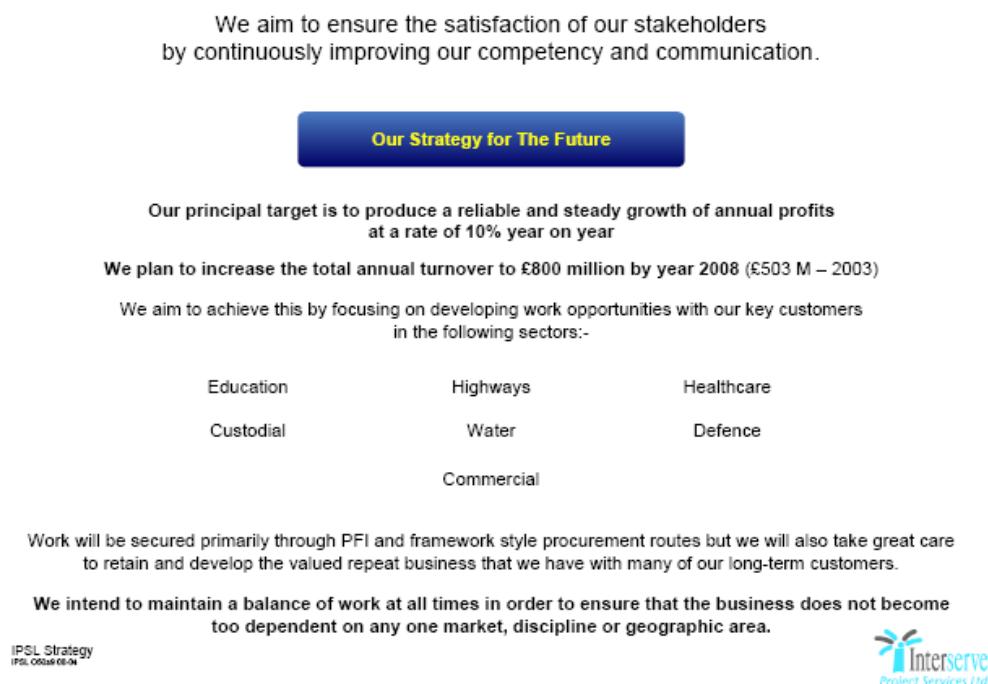
Figure 4: Interserve's guiding values



## Market strategy and targets

2.8 Finally, the company is transparent with its stakeholders about the type of work it wishes to pursue and its growth targets, as shown in Figure 5.

Figure 5: Strategy and targets



## **Conclusions**

- 2.9 Interserve's leaders' open and transparent approach provides an excellent basis for developing effective supply chain relationships with clients and suppliers. It also provides clarity to new and existing staff, clearly setting out the company's mission, vision, guiding values and direction. Finally, the approach provides cohesive thread between the organisation's diverse construction activities.
- 2.10 Adopting this strategic approach is demanding. It requires the company's leaders to have clear view of the business's market and resource capacity and capability. However, if the process is completed thoroughly it provides a firm basis upon which to develop:
- The company's people and culture
  - Supply chain partnerships
  - Business processes.

## **CASE STUDY 2 – INTERSERVE’S WEST MIDLANDS REGION SUPPLY CHAIN FORUM**

### **Introduction**

- 2.11 This case study illustrates how a supply chain can be developed by a main contractor taking the lead and working in partnership with its supply chain partners.
- 2.12 Interserve West Midlands Region had been successful in winning a wide range of framework projects. In order to continue to improve the company’s performance the Regional Manager and his Senior Management Team took the lead in organising a Supply Chain Forum for its key supply chain partners. The aim of the workshop was to explore how Interserve and its supply chain could improve performance for the mutual benefit of all parties. The event was well attended by over forty suppliers.

**Figure 6: The members of Interserve’s West Midlands Region Supply Chain Forum**



### **Regional supply chain’s objectives**

- 2.13 The suppliers worked with Interserve’s staff to firstly agree the objectives that the supply chain forum would work towards. These are:
- The health and safety of all personnel
  - The support and growth of our businesses
  - Continuously improving performance and better client value
  - Reduced ‘waste’ in all its forms
  - Improved profit margins
  - Improved certainty of turnover and work flow
  - Reduce transactional costs and time
  - Reduce construction times
  - Reduce defects and re-work
  - Joint management and clear ownership of risks and costs
  - Open and honest communications and equitable long term relationships
  - Develop a ‘one organisation’ culture that rewards innovation and creativity
  - An enjoyable arrangement which enhances reputations and relationships of all involved.

### **Regional supply chain's issues**

2.14 The forum considered the issues that needed to be resolved in order to achieve the objectives. These were wide ranging, but serve to illustrate the practical issues faced by many supply chains trying to move forward. The issues included:

- Communication and Information processes
- Understanding each other's business objectives
- Understanding each other's systems, processes and requirements
- Achieving the new 'culture' we desire
- Team working
- Health, Safety and Welfare
- Tendering processes (simplification and cost reduction)
- Payment processes
- Improved process for resolving problems and disputes
- Pricing and costing processes
- Pain and gain incentivisation system
- Protection of overhead and profit allowances
- Involvement of specialist contractors in project planning and programming
- The quality of specialist contractors and Interserve's staff.

### **Regional supply chain's opportunities**

2.15 The forum considered the opportunities that were available through working closely together in a supply chain. The opportunities ranged from those which would provide low cost and measurable improvements in the short term to those which would require longer term development before delivering tangible benefits. The opportunities identified included:

- Joint management processes
- IPSL joint specialist suppliers and contractors training programmes
- Joint purchasing
- Joint training
- Effective and open communication
- Suppliers increased value management input into tenders and design development
- Improving work flow
- Sharing knowledge
- Improved use of information technology
- Consistency of team members
- Transparent key performance indicators for all
- Reduce bureaucracy
- Reduce the number of acronyms or at least provide a glossary.



- 2.16 Following the forum, Interserve's Regional Management Team allocated the development of the opportunity areas amongst themselves. The managers have set up teams of suppliers for developing and implementing specific improvements.

### **Conclusions**

- 2.17 This type of supply chain activity generates plenty of really useful points and ideas. It provides an excellent starting point upon which to develop the supply chain through joint working on specific actions.
- 2.18 The issues raised at the workshop were largely to do with the need to improve supply chain communications and a better understanding of supplier and main contractor processes i.e. the need to develop closer working relationships.
- 2.19 The opportunities raised by the forum were enlightening for the suppliers and main contractor alike. Interestingly, the development of the actions will provide good opportunities for closer working and overcome many of the issues identified.
- 2.20 A word of warning. Bringing suppliers together in this way will raise expectations within the supply chain. Make sure that any actions are scheduled with realistic timescales and that adequate resources are allocated to drive through the improvements.

## CASE STUDY 3 – THE DEPARTMENT FOR WORK AND PENSIONS (DWP) FRAMEWORK

### Introduction

2.21 This case study illustrates how a client's involvement can improve supply chain performance. It also shows how a close relationship between members of the supply chain can deliver productivity gains.

Figure 7: Interserve's North West Region DWP Supply Chain Members

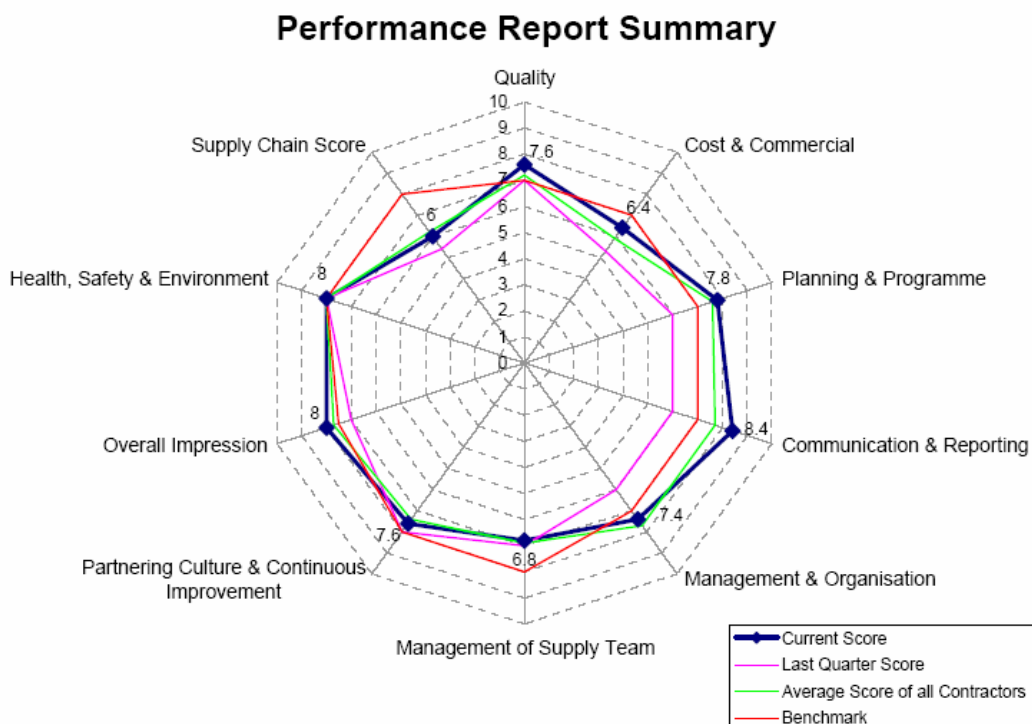


2.22 The case study is based upon two workshops held with the DWP and Interserve's supply chains in Scotland and the NW of England. The framework projects involved the refurbishment of the DWP's Jobcentre Plus facilities. The focus of the workshops was to improve performance framework by learning lessons from client feedback and a review of performance from the previous phase.

### Client's supply chain survey

2.23 The DWP nominated a number of preferred specialist suppliers as part of the Jobcentre Plus Framework. These suppliers worked nationally with eleven main contractors (Regional Works Contractors), including Interserve. DWP conducted a quarterly survey of their preferred suppliers with the objective of benchmarking how the main contractors were performing. Figure 8 shows an example of the DWP's balanced scorecard. The scorecard enabled main contractors to monitor their performance across ten key areas over time. By plotting the average score of all contractors it also enables a main contractor to compare themselves with the performance of other main contractors that make up the supply chain.

Figure 8: Lead contractors' performance report



### **Framework supply chain issues**

2.24 The following issues were identified by the supply chain members:

- Ensure that correct and complete information is delivered on time
- Clear, accurate and timely communications
- Involve the supply chain in the design process
- Adhere to the design freeze
- Clear and accurate tracking of changes
- Pro-active and realistic phasing of works on site
- Improve the co-ordination of site activities, supporting clear access and work flow and the elimination of return visits
- Efficient design change procedure required (concept design)

**Figure 9: Interserve's Scottish DWP supply chain members**



### **Framework supply chain opportunities**

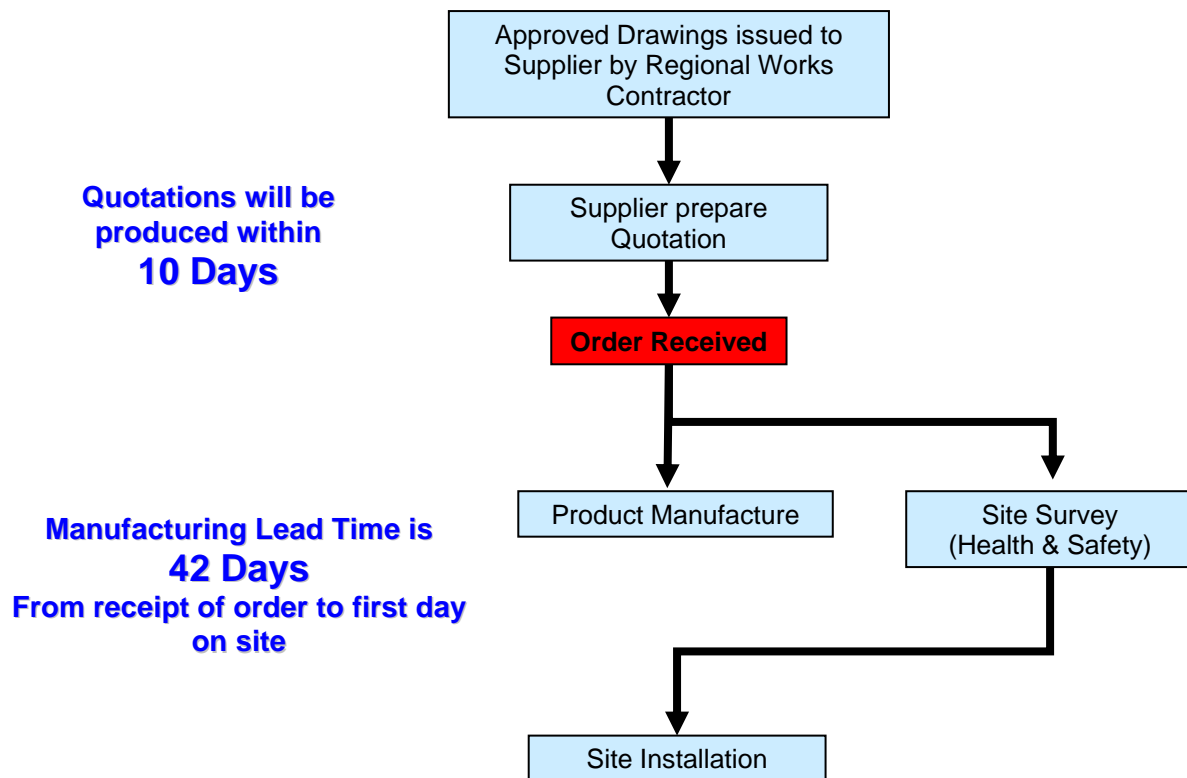
2.25 The supply chain partners identified the following opportunities for improvement:

- Reduce project costs by resolving issues
- Reduce snagging and return visits by improved information and programming
- Overall business development for the supply chain partners
- Reduction in tendering and estimating transactional costs with a tried and tested supply chain i.e. a schedule of rates and contractor workload discussions
- Pre-machining of door sets for access control system
- Increased standardisation e.g. standard height door sets and over-panel, standardise air conditioning units
- Use of alternative (better value) products
- Hold pre-construction cluster co-ordination meetings for specialist contractors
- Appropriate suppliers to attend dilapidation meeting
- Comprehensive pre-start site surveys
- Hold a District installation training day
- Improve communications by issuing minutes of site meetings to suppliers
- Reduce waste in all its forms (people, time, cost, materials, processes etc.).

### **Understanding supplier requirements**

2.26 The workshops also provided an opportunity for key suppliers to explain their processes and service times to the project team. Figure 10 shows an example from one of the supply chain partners.

Figure 10: Supplier process flow chart



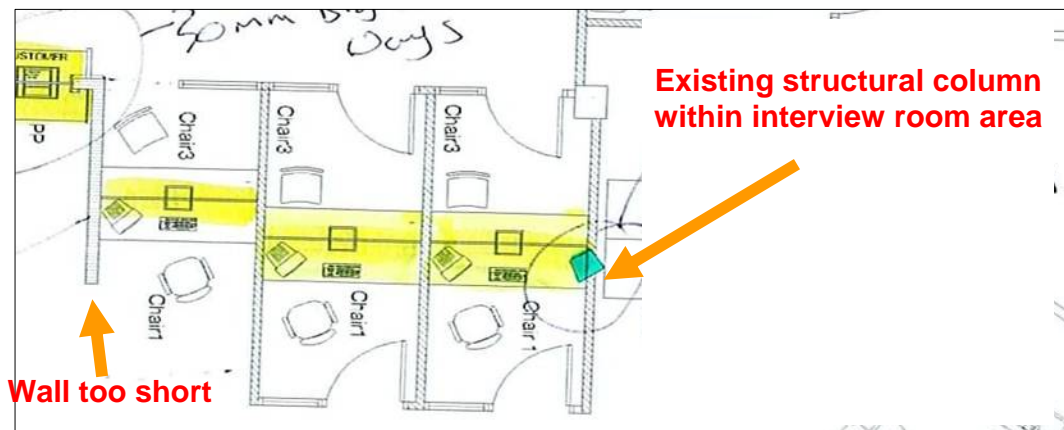
2.27 Suppliers were also able to feedback on the areas for improvement in advance of the next phase. For example, Allan Nuttall Ltd. provided an clear presentation of commonly encountered problems with the installation of interview screens and booths including:

- Runs of several booths set out staggered to suit local site conditions
- Adjacent walls had insufficient length to accept bulkhead
- Various assortment of CAD blocks used some showing desks with return tops
- Mechanical ducting installed too low, fouling bulkhead
- Product size altered to suit local conditions
- Structural objects fouling installation area
- Ceilings Installed prior to our installation
- Varying sizes of structural openings.

2.28 Figure 11 shows how an existing structural column and a flank wall which is too short results in modifications to the:

- Desktop
- Modesty panel
- Canopy Sub Frame
- Canopy Bulkhead & Fascia Panels
- Glass Mounting Trough
- Position Closed Blind.

**Figure 11: Supplier illustration of site installation problems**



## Conclusions

- 2.29 The client's supply chain survey proved to be a powerful benchmarking tool which focused the main contractors and its supply chain members on areas for improvement.
- 2.30 The construction work involved in a DWP refurbishment is generally straight forward. However, as the issues illustrate, the main problems revolve around releasing timely and accurate information and controlling design changes. The control of these factors is essential if the supply chain is to successfully complete this type of fast-track project to schedule.
- 2.31 The supply chain partners came up with some very practical suggestions for improving supply chain performance. As with Case Study 2 many of the 'opportunities' were focused on improving supply chain members' communications.
- 2.32 Creating opportunities for suppliers to feedback to the supply chain is a valuable exercise if it is directed towards resolving site problems and not used as an overt company promotion exercise.
- 2.33 Framework workshops have proved a valuable tool for developing team culture and improving communications and performance across Interserve's business.

## CASE STUDY 4 – SOMERFIELD STORES FRAMEWORK

### Introduction

2.34 This case study illustrates how an informed and progressive client can work effectively with forward looking contractors and their supply chains.

2.35 The Construction Procurement Team at Somerfield Stores had been set the challenge of dramatically reducing the costs of refurbishing existing stores. Interserve were one of Somerfield's eight framework contractors asked to assist in reducing costs through its supply chain. The case study is based upon the consultant's work supporting Interserve in this task.

### The client's collaborative working principles

2.36 To support supply chain improvements Somerfield set out the type of culture it wished to develop with its supply chain members. This is based on a collaborative working model as shown in Figure 12.

Figure 12: Collaborative working principles



### Clear client requirements

2.37 Somerfield clearly specified what it required from their construction service suppliers. This was to:

- Be customer focussed
- Act as a Stakeholder
- Commit to a common vision and values
- Share knowledge
- Develop a relationships based on trust
- Commit to continuous improvement.

2.38 The Somerfield Construction Procurement Team also set out its own requirements of the construction supply chain. These were for the supply chain to:

- Be flexible and adaptable
- Maximise the use of what we have already got
- Move fast - start immediately & finish early
- Minimise wastage - time/effort/materials/defects
- Remove duplication in the process
- Lower whole life cost
- Think long term against short term pressures
- Consist of regular partners.

### **Supply chain challenges**

2.39 Over the next 12-months Somerfield required its supply chain to take up the following challenges:

- Work as a supply community to drive down cost
- To demonstrate an understanding of Somerfield's needs
- All projects moved onto Collaborative working
- Understand & develop cost data from trials.

### **Collaborative supply chain groups**

2.40 Somerfield formed a 'Contractors Forum' where improvement issues could be raised and discussed and good ideas shared between main contractors.

2.41 Somerfield also developed a 'Collaborative Group' to improve communications and performance. The Group's achievements included:

- Team members who talked passionately about Collaboration principles as second nature
- A positive change in attitude from individuals
- A realisation of how hard it is to be open and transparent
- A better understand of costs.

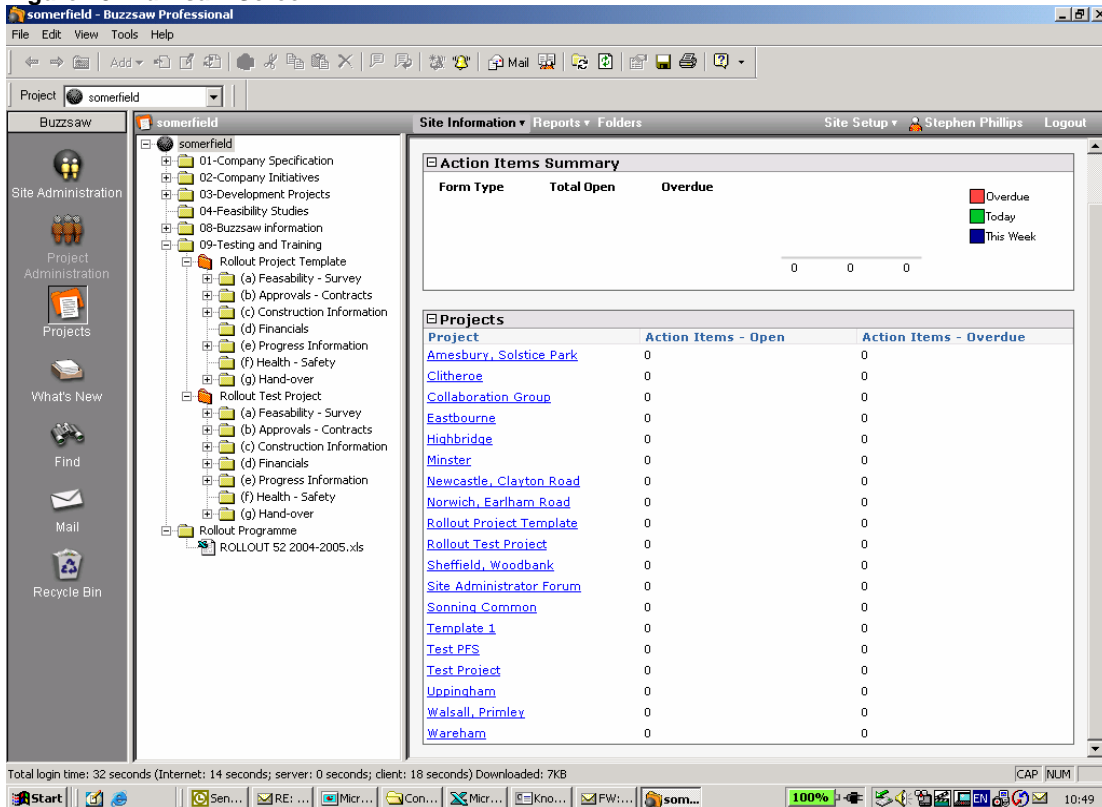
### **Continuity is the key**

2.42 The consultant found, at project level, that high performing teams had developed very effective communication processes. The knowledge required by team members to underpin this level of performance took time to acquire. Work continuity and experienced was therefore important to maintain high levels of communication and performance.

### **Client 'extranet'**

2.43 Somerfield invested in an 'extranet' (refer also to Case Study 6) system called 'Buzzsaw' to link the framework's stakeholders and improve project team communications. Figure 13 shows a screen dump illustrating the wide range of fields the software covers.

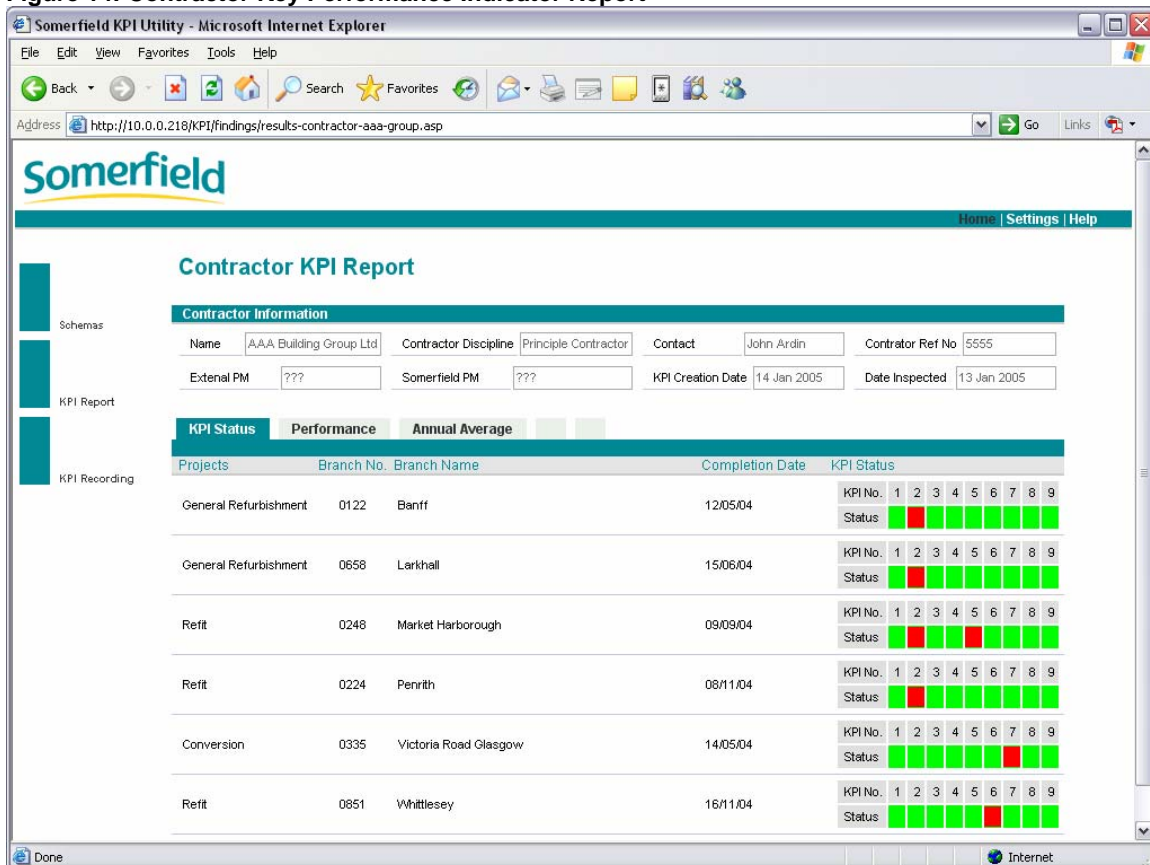
Figure 13: Buzzsaw Screen



## Contractor key performance indicators

2.44 In order to benchmark and continuously improve contractor performance Somerfield introduced an online Key Performance Indicator (KPI) system. Figure 14 illustrates a screen from the KPI report.

Figure 14: Contractor Key Performance Indicator Report





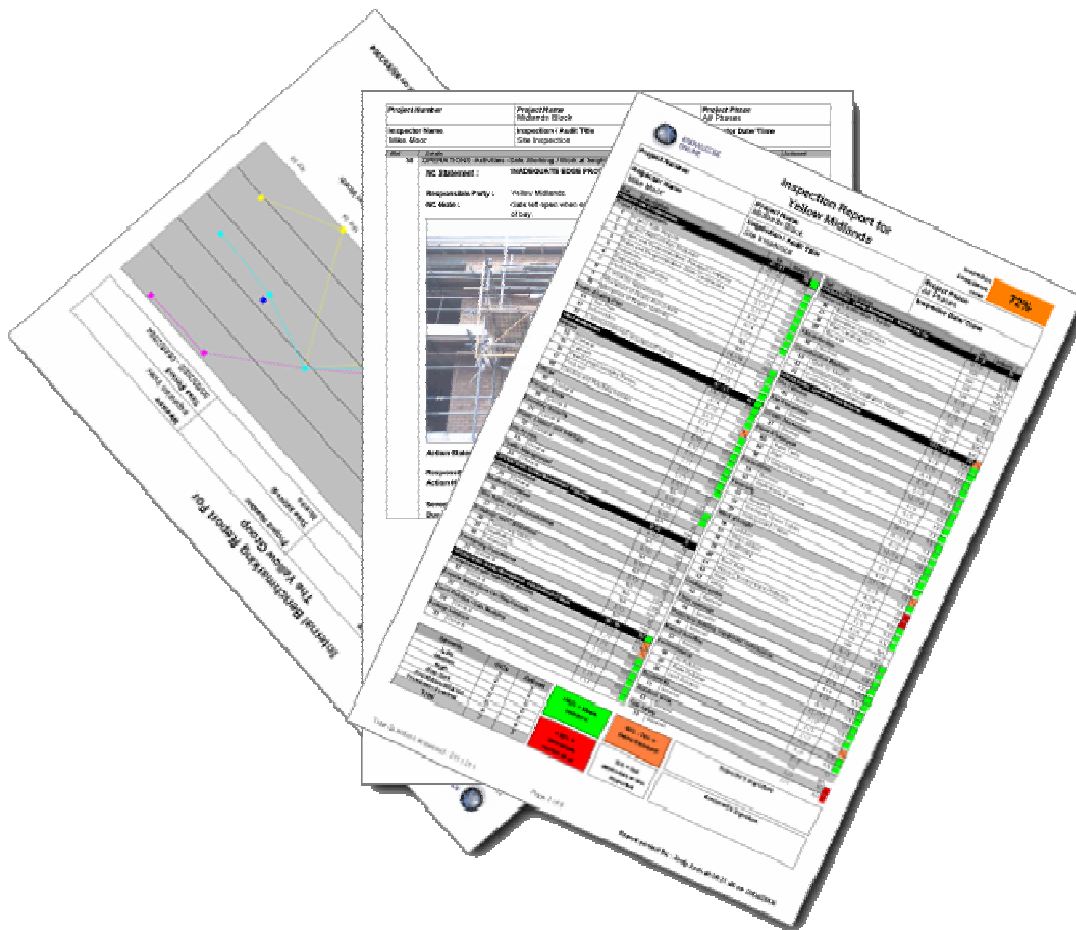
## Electronic health and safety tool

2.45 Another new communication tool that Somerfield introduced was the “E-safe 100” reporting system. This is a comprehensive health and safety management software tool which includes the following electronic functions:

- Create health and safety audits and inspections
- Record non-conformances – attribute responsibility – attach images and audio
- Close the action sign-off loop
- Automated reminders and alerts
- Electronic and paper reports
- Benchmarking and trend analysis – make the most of information
- Automatic escalation of alerts.

2.46 Figure 15 illustrates some of the documents that may be generated by the E-safe 100 reporting system.

**Figure 15: E-safe 100 Reporting System**



2.47 The E-safe 100 software may be run on a PC via a web browser or Personal Digital Assistant (PDA) via Pocket PC application. Connectivity may be secured through the following methods:

- Cradle/cable/infrared/Bluetooth via PC/mobile phone
- WiFi direct to internet
- Dial-up/GPRS/3G to internet.

2.48 Figure 16 shows E-safe 100 being run on a PDA.

Figure 16: A PDA running E-Safe 100



- 2.49 After conducting the research work the consultant was able to put forward a range of recommendations to Interserve to further improve the framework's processes, productivity and costs.
- 2.50 The Somerfield Framework has subsequently been reduced to six contractors, including Interserve.

### Conclusion

- 2.51 Working for a retail sector client, such as Somerfield, offers a main contractor many supply chain learning opportunities. Somerfield provide clear ground rules for the way it wishes to work with its suppliers and the performance requirements.
- 2.52 The challenging targets set by the client for reducing costs focused the main contractors to work in partnership through the 'Contractors Forum' and 'Collaborative Group'.
- 2.53 Work continuity is a key factor in keeping supply chains and their personnel together. It has proved to be a key factor in providing productivity gains in Framework arrangements. However, giving the main contractor work continuity is often not the highest priority with commercial clients. This leaves the main contractor with the supply chain challenge of quickly assembling skilled and client-experienced teams when the client demands construction services.
- 2.54 The case study provides another example of a client benchmarking its main contractors' performances across a number of key performance areas. Benchmarking has proved helpful to both parties to improve performance.
- 2.55 In this case a retail client introduced electronic tools to improve communications and the speed of response. Although this type of tool is familiar technology in the retail sector it can present a challenge to main contractors and supply chain members that have not invested in new technology.

## CASE STUDY 5 – NHS PROCURE 21 SANDWELL HOSPITAL CLUSTER GROUP

### Introduction

2.56 This case study illustrates how a main contractor working with a group (cluster) of specialist contractors focused on a particular building element can improve project productivity. The case study is based on a cluster group workshop held for the Sandwell Hospital Project (Figure 17), part of the NHS Procure 21 Framework.

Figure 17: Sandwell Hospital



2.57 The aim of the workshop was to develop the project supply chain cluster for the **external envelope** works in such a way as to increase the partners' productivity and profitability while providing the client with best value.

2.58 The objectives were to:

- To improve understanding of partnering and supply chain working.
- To reaffirm the project objectives and identify the cluster's objectives.
- To establish what each cluster contractor require from each other, the lead contractor and designers.
- To identify the cluster issues and practical improvements that will assist in improving value, productivity and profitability.
- To produce an action plan to make this happen.
- To develop an enjoyable working relationship.

### A new culture

2.59 The workshop was motivated by the desire to continuously improve the performance of Interserve's NHS Procure 21 supply chain. Interserve has been selected as one of eleven contractors nationally to undertake the NHS Procure 21 hospital facilities building programme over a next five years period. The NHS is expecting significant improvements in design and construction times, cost savings and quality improvements through partnering with its suppliers. To achieve this has required a closer working relationship between the main contractors and their specialist contractors and between 'clusters' of specialist contractors working on elements of a project.

2.60 The cluster members recognised that new ways of working are required to reflect a culture of trust, openness and honesty. The partners were encouraged at the workshop to contribute ideas that will improve productivity and profitability for all. Furthermore, the cluster was asked to raise any possible problems at the earliest opportunity to enable the team to share and resolve these together.

### Cluster issues and relationships

2.61 The team members were first asked to identify the key issues and interrelationships (Table 2) between their own organisation and other members of the external envelope cluster.

**Table 2: External envelope cluster contractors' issues and relationships**

Specialist	Key Issues	Interrelationships
Concrete Structure	<ul style="list-style-type: none"> <li>• Earlier involvement with the structural engineer</li> <li>• Clear agreement on tolerances between designers and specialist contractors</li> <li>• Design 'buffer' slipping</li> </ul>	<ul style="list-style-type: none"> <li>• Designers</li> <li>• Brickwork</li> <li>• Steelwork</li> <li>• Cladding</li> </ul>
Steel Frame	<ul style="list-style-type: none"> <li>• Earlier involvement with structural engineer</li> <li>• Site logistics</li> <li>• Clear agreement on tolerances between designers and specialist contractors</li> <li>• Steel prices, availability and British Steel's section rolling programme</li> <li>• Joint designer / specialist use of CAD compatible with manufacture</li> <li>• Project Extranet</li> </ul>	<ul style="list-style-type: none"> <li>• Designers</li> <li>• Brickwork</li> <li>• Windows</li> <li>• Profiled steel inner skin to external wall</li> <li>• M&amp;E plant room</li> <li>• Roofing</li> </ul>
Cladding	<ul style="list-style-type: none"> <li>• Early involvement with designer</li> <li>• Site logistics</li> <li>• No 'on-site' cutting adding cost and time</li> <li>• Accurate design information i.e. steelwork erection drawings</li> </ul>	<ul style="list-style-type: none"> <li>• Designers</li> <li>• Steelwork</li> <li>• Concrete structure</li> <li>• Roofing</li> </ul>
Roofing	<ul style="list-style-type: none"> <li>• Earlier involvement with designer</li> <li>• Site logistics</li> </ul>	<ul style="list-style-type: none"> <li>• Cladding</li> <li>• Steelwork</li> <li>• Brickwork</li> </ul>
Brickwork	<ul style="list-style-type: none"> <li>• Earlier involvement with designer</li> <li>• Site logistics</li> <li>• Working scaffold</li> <li>• Mixing bricks</li> </ul>	<ul style="list-style-type: none"> <li>• Concrete Structure</li> <li>• Steelwork</li> <li>• Cladding</li> </ul>
IPSL	<ul style="list-style-type: none"> <li>• Site logistics</li> <li>• Early warning system and compensation events</li> <li>• Training apprentices</li> </ul>	<ul style="list-style-type: none"> <li>• All specialist contractors</li> </ul>

### Cluster members' requirements of each other

2.62 The cluster partners identified the following requirements of each other to assist in achieving the project objectives. For example, the brickwork contractor's requirements are shown in Table 3.

**Table 3: Example of a cluster member's requirements**

Brickwork Contractor	Requirements
<b>Brickwork's requirements of IPSL</b>	<ol style="list-style-type: none"> <li>1. Design information – sort out in advance</li> <li>2. Early involvement in design decisions</li> <li>3. Realistic programme and mobilisation period</li> <li>4. Clear access and storage areas</li> <li>5. High quality site facilities</li> <li>6. Mutual respect</li> <li>7. High standard of health and safety.</li> </ol>
<b>Brickwork's requirements of other cluster partners</b>	<ol style="list-style-type: none"> <li>1. Good working relationships</li> <li>2. Understanding of each others needs</li> <li>3. Good base build within agreed tolerances.</li> </ol>

## **Cluster issues**

2.63 The cluster partners identified the following key issues which might prevent the project objectives from being achieved:

- Design information - timely, complete and relevant information
- Access to clear work areas
- Uninterrupted work flow
- Specialist contractor interfaces
- Realistic and agreed cluster programme
- Clearly defined roles and responsibilities
- Timely approvals of safe methods of work
- Eradication of non-value adding activities and processes
- Training requirements
- Potential measures for shared saving
- Using Interserve's project control procedures effectively
- Protection of stored materials
- Value and risk management – margins, incentives and risk sharing
- Development of a cluster programme.

## **Conclusions**

2.64 Bringing specialist contractors together early in the project (ideally early in the design phase) provides excellent opportunities for improving productivity in the construction phase.

2.65 Traditionally main contractors work with specialist contractors on a one-to-one basis, bringing them all together for co-ordination meetings during the construction period. Therefore it is not surprising that specialist contractors can be a little reticent when asked to work in a cluster arrangement. An early cluster workshop can help breakdown the barriers and assist the cluster members identify benefits of effective teamwork focused on the completion of a particular building element.

2.66 Getting the cluster members to identify the issues and relationships develops a common understanding of the different work packages. Asking each contractor to state their requirements is a practical approach to establishing internal customer and supplier relationships.

## CASE STUDY 6 – EXTRANET COMMUNICATIONS

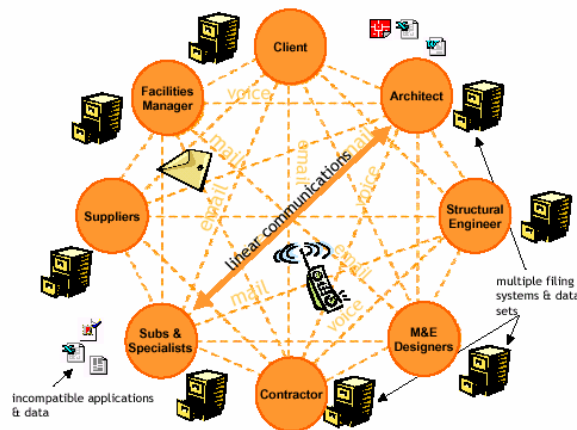
### Introduction

- 2.67 The final case study reviews how a project 'Extranet' can assist project communications. The case study is based upon the BIW Extranet system used by Interserve on many of its larger projects and some framework contracts.

### Traditional project information processes

- 2.68 One of the key factors in successful supply chain management is ensuring that the right information is delivered quickly to the right people, in the format they need. This was traditionally done by posting paper drawings, which then progressed to email, with issues of incompatibility between systems. Figure 18 illustrates this process.

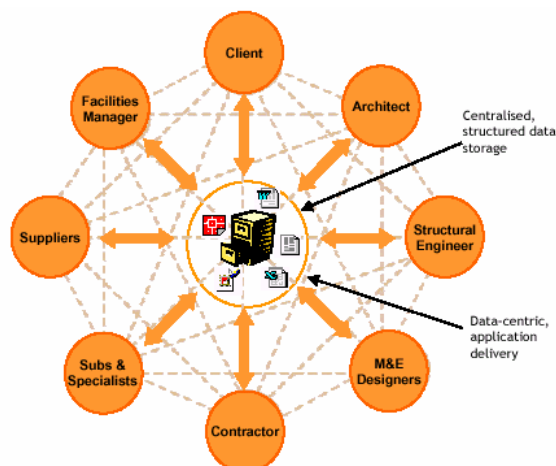
Figure 18: Traditional project communication processes



### Extranet information process

- 2.69 When Extranets became available, they were used to provide an electronic centralised filing system, coupled with built in software viewers to solve compatibility issues. They also ensured the efficient distribution and audit control necessary to manage a complex supply chain. This greatly reduced the communication difficulties, the lag with traditional distribution systems, and duplication on filing as indicated. With access being via the internet, the dependency on having proprietary software on each user's computer has been eliminated. Figure 19 illustrates the central server at the heart of an "Extranet".

Figure 19: A project extranet



### Using an extranet

- 2.70 Each user on an extranet system has a unique log on and password that ensures security, audit control and bespoke views to be presented. This enables the



documentation to be directed to that user. For example, Figure 20 shows the headlines page for a project team member, 'James Ballantyne' on the Withington Hospital Project.

**Figure 20: BIW's headline page**

**Project Summary**

117 Drawings Registered 113 Drawings Submitted

Contents	issued	for info	action
Current System Notices	0		-
Project Forum Messages	12		-
Current Project Notices	1		-
Drawings	207		
Photographs	59		
Minutes	26		
Safety	4		
Planning & Programming	25		
Specifications & Product Data	38		
BIW Documentation	14		
Correspondence	2		

Contents	issued	for info	action
Procurement	1		
Room Data Sheets	39		
Quality Assurance	1		
Interserve Private	2		
Risk Management	5		
Cost Control	1		
Presentation Documents	4		
Schedules	1		
Instructions	0		-
Instruction Responses	0		-
Comments issued to you	11	3	-
Comments on your publishing	3		-

**Project Weather Manchester**

4c:40f Tonight Plenty of clouds  
Light Breeze from West

11c:53f Friday A.M. rain; cloudy  
Gentle Breeze from South-South-East

12c:55f Saturday Mostly sunny  
Gentle Breeze from South-East

15c:59f Sunday Mostly sunny  
Gentle Breeze from South-South-East

11c:52f Monday Showers  
Moderate Breeze from South

**Design Images**

5 photos showing construction progress.

2.71 The "HomePage" can be configured to suit the users needs, in particular a Project Summary can be shown, that lists and summaries the actions for each project the user can access. Figures 21 shows that there are three documents for information pending on the St Helens project, and lots on the Sandpit project.

**Figure 21: Users 'homepage' showing documents pending**

**ProjectsOverview**

7 projects found 1/1 page records per page 10

Project Name	Unread Notices	Comments	Documents for Info	Action
Clone Project	0	0	0	0
CPCT - Mental Health Resource Centre	0	0	0	0
Interserve Health - SANDPIT PROJECT	7	85	35	12
Procure 21 Common Information	0	0	0	0
Sandwell A&E	0	0	0	0
St Helens Wards	0	0	3	6
Withington Community Hospital	0	0	0	0

2.72 Clicking on the Project Name takes you to that particular project's headline page, as shown in Figure 20.

## Viewing drawings

2.73 Clicking on the Documents / Drawings on the left will open up a search pane, to allow drawings to be located, as shown in Figure 22.

Figure 22: Viewing drawings

The screenshot displays the BIW system interface. The top section shows a search criteria panel with filters for name, category, company, and status. Below this is a table of search results, including drawing names, revisions, and descriptions. A callout points to the search criteria panel, stating: "Search criteria, in this case on drawings, to select all revisions, publisher, published dates, those unseen etc". Another callout points to the search results table, stating: "Search results, of name, revision, description, reason for issue, date etc". A third callout points to the 'Comments' column in the table, stating: "Comments on drawings made with discussion thread hierarchy. Clicking on comment shows it's location on overview (bottom left), and zooms to place on drawing." Below the table, a callout points to a drawing entry, stating: "Select drawing to view in BIW viewer". The bottom section shows a detailed view of a drawing, with a callout pointing to a specific area, stating: "Zoom in on drawing to show detail".

2.74 From here it is easy to zoom in to the detail, and add comments to the document, by use of a searchable text comment, with an associated Red Line if required. It is then possible to append a reply to the comment, and create a discussion thread, before the Design Manager issues an overriding comment to clarify the outcome. Any comments made are automatically forwarded to the drawing recipients, for their information. Distribution lists ensure the easy dissemination of information to those who need to see it (Push), while the system also allows other users to view any unrestricted document (Pull).

### Other extranet functions

2.75 Other functionality of the BIW system includes:-

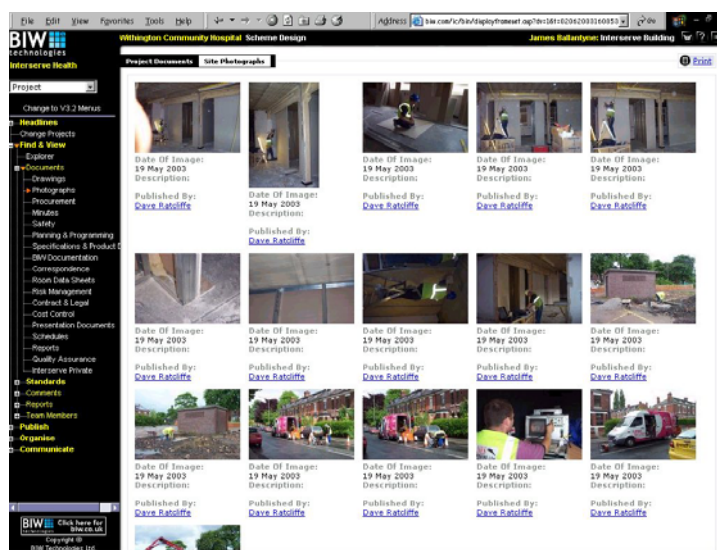
- Health & Safety file – The ability to create a virtual H&S file for onward transmission to the client and his maintenance team
- Instructions / Requests For Information – The process flow to enable a RFI document to be raised, controlled, responded to and ratified by the Design Manager.
- Diary – A calendar for meetings as appropriate for the project
- Contact list of all users with access to the project is automatic.



- Archive – The ability to create an off line archive, or by keeping the system live, all the information is available for the maintenance and upkeep of the facility, allowing quick and easy location of documents (as opposed to boxes of paper archive).

- 2.76 Extranets afford access from any internet enabled computer in the world, allowing healthcare experts, in say America, to be members of the supply chain, having full access to all the project information. The immediacy of the system allows for users to view comments interactively, while holding a telephone conversation. Interserve's approach is also to ensure that members of the supply chain are fully trained in the use of the system. Thus the whole team benefit from the use of the extranet.
- 2.77 Other facilities within the BIW system are photographs being grouped by Author / date into bundles as shown in Figure 23. These are shown as thumbnail images. Clicking on them opens the full image.

**Figure 23: Storing and viewing photographs**



- 2.78 Most major file formats are supported, for example pdf files. This allows users to comment on the document, and to view it without having to have expensive programme management software installed on their computer. Commenting is easy as shown in Figure 24.

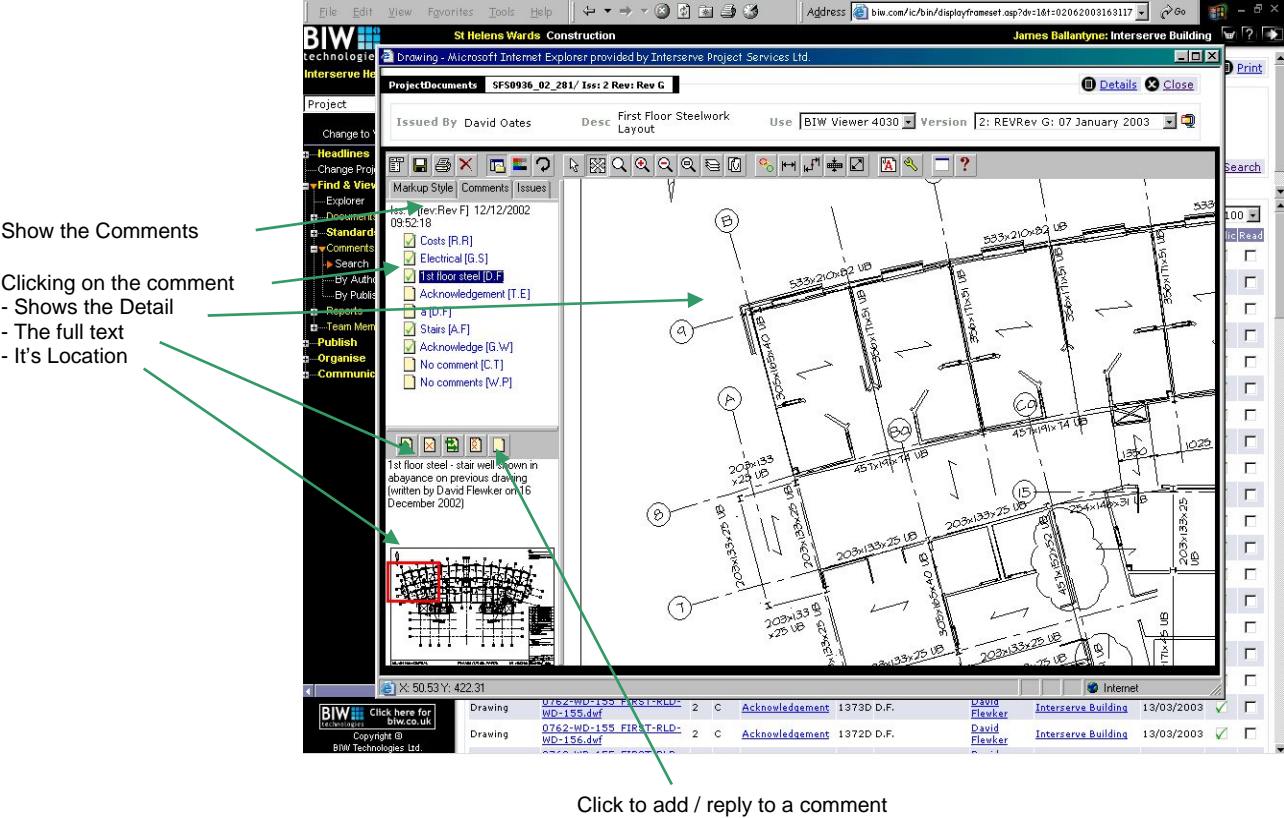
## Conclusions

- 2.79 Extranets can improve the effectiveness of communications between supply chains. However, to be successful extranets require:

- Supply chain members to have broadband connections to the internet
- An extranet 'champion' to implement and maintain the system
- Standards for hardware and software to be agreed by the supply chain members
- Training for all users
- An effective helpline for users
- Ground rules for the effective use of the system
- Regular user feedback and reviews.

- 2.80 Case Study 4 illustrated how some clients have their own extranet systems they require the supply chain to use. This will mean the supply chain members are likely to have to work with a variety of extranet systems until a time where an industry standard has been established.

Figure 24: Commenting on drawings



### 3. Supply Chain Issues and Actions

#### INTRODUCTION

- 3.1 This section of the report considers the issues that need to be resolved if integrated supply chains are to be successfully developed by contractors. Alongside the issues suggested actions for improvement are described for contractors.
- 3.2 The first phase of Interserve's supply chain project identified the issues which affect the development of integrated supply chains within the construction industry, particularly at a first tier level. Figure 26 illustrates the cause issues and the effects which create the barriers to the construction industry developing integrated supply chains.
- 3.3 The main **causes** of the problem include:
- **People** - their knowledge, skills and understanding of modern management principles and practice
  - **Culture** - conditioned through years of bad practice and lack of trust
  - **Structure** - fragmentation, separating design from construction and the high number of small specialist organisations
  - **Leaders** - not understanding or resisting the business case
  - **Contracts** - not supporting integrated teams and supply chains
  - **Processes** - few excellent standard processes that add value not cost
  - **Research and Development** - perceived as a cost not an investment in the future
- 3.4 The **effects** on the UK construction industry include:
- **People** – not being attracted or retained, skill shortages and gaps and motivational problems
  - **Productivity** – wastage of resources and inefficiencies priced into bids
  - **Predictability** – inconsistent performance and low levels of predictability
  - **Client Satisfaction** – widespread dissatisfaction with costs and the quality of service and product
  - **Profitability** – low, around 2% on the industry's turnover
  - **Investment** – low, affecting ongoing improvement
  - **Disputes** – high, £700m per annum spent on legal fees by the industry

Figure 25: Five key supply chain development areas

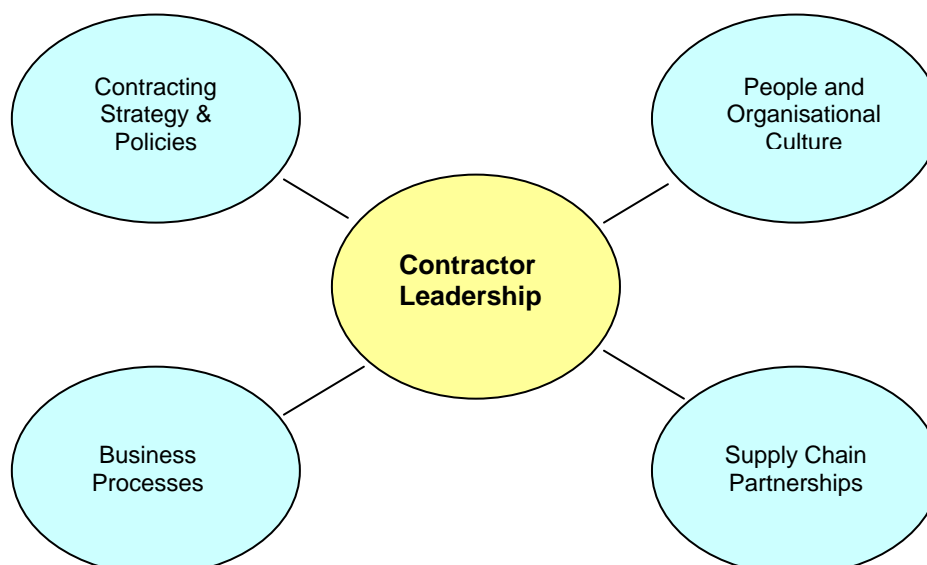


Figure 26: Cause and effect diagram – barriers to supply chain development

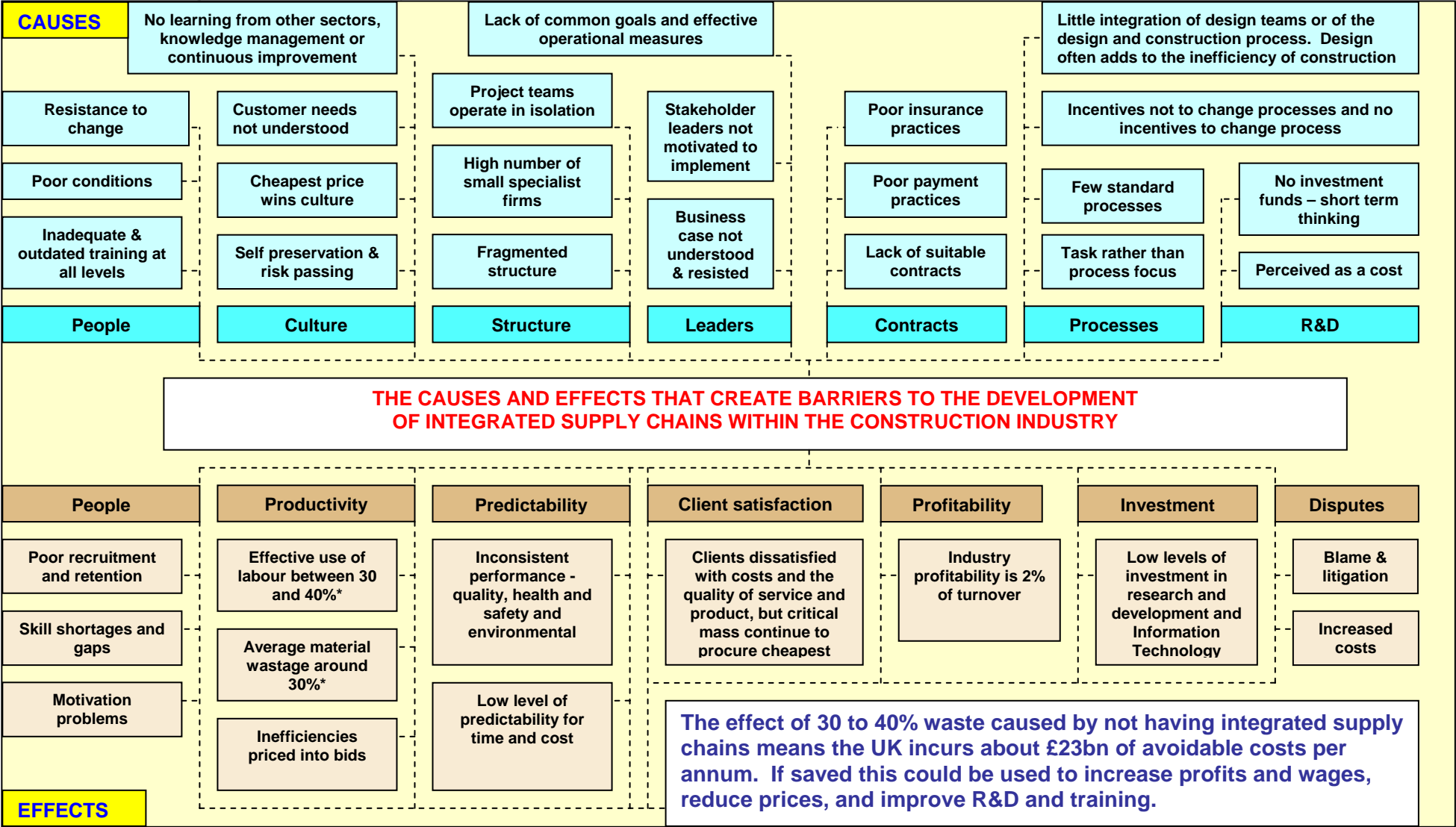


Figure 1: Integrated Supply Chain Cause and Effect Diagram

- 3.5 This phase of the project focused on how main contractors and their supply chain members can develop an effective supply chain. Through the project's activities it was found that the supply chain members were experiencing similar supply chain issues in the different supply chains with which they were associated. These issues are categorised under five key supply chain development areas are illustrated in Figure 25 and described in Table 4.

**Table 4: Supply chain development areas explained**

<b>SUPPLY CHAIN DEVELOPMENT AREAS</b>	
<b>Development Area</b>	<b>Description</b>
<b>1. Contractor's Leadership</b>	The leadership of the main contractor and supplier organisations lies at the heart of developing a supply chain. It is concerned with how leaders develop and facilitate the achievement of the mission and vision, develop values required for long-term success and implement these via appropriate actions and behaviours. It is also how they are personally involved in ensuring the organisational management system is developed and implemented. In order to develop an effective contracting organisation the company's leader must hold supply chain development as high priority in their mission, vision and values.
<b>2. Contracting Strategies and Policies</b>	A contracting strategy and policy is how the organisation plans to implement its mission and vision. This must be supported by appropriate policies, plans and targets. Without a long term strategy it is impossible to develop an effective and sustainable supply chain.
<b>3. People and Organisational Culture</b>	People and organisational culture is how the organisation releases the full potential of its people at an individual, team and organisation-wide level. It is also about how the organisation plans these activities in order to support its contracting strategy and desired organisational culture. Developing an effective supply chain relies on developing a range of close relationships. These include those between the main contractor and its suppliers, suppliers and their customers, and between groups of suppliers (clusters) who have to work together in order to maximise productivity.
<b>4. Supply Chain Partnerships</b>	Supply chain partnerships require the main contractor to plan how it will procure and manage its external partnerships and internal resources in order to support its contracting strategy and effective operation of its processes. Effective partnerships require clear policies, an effective action plan and consistent behaviour.
<b>5. Business Processes</b>	Business Processes are how the organisation designs, manages and improves its processes in order to support its contracting strategy and ensure best value and delighted clients. The main contractor's and suppliers' processes and documentation must reflect the supply chain values.

- 3.6 The experience of working with Interserve's supply chains has served to demonstrate that their development cannot be dealt with in isolation. An effective supply chain is an integral factor affecting a contractor's performance, but cannot be accomplished without the right leadership, strategies, people and culture and business processes being in place.
- 3.7 Tables 5 to 9 highlight the issues under each of the supply chain development areas and suggest improvement actions a contractor may wish to consider taking. The Tables, where appropriate, also reference the relevant Case Studies in Section 2 of the report to illustrate some of the actions.

## CONTRACTOR LEADERSHIP

Table 5: Contractor leadership issues and actions

CONTRACTOR LEADERSHIP			
Issues	Description	Actions	Case No.
1. Gain leader's commitment	The development of the organisation leaders' commitment and belief that integrated supply chains are the key to improved competitiveness, growth and profitability. This includes the main contractor, clients, and all supply chain organisations.	<ul style="list-style-type: none"> <li>• Make the business case for supply chain development</li> <li>• Review the supply chain behaviour of excellent companies within and outside the construction industry</li> <li>• Develop a few simple supply chain performance measures</li> <li>• Demonstrate improved performance on a project or framework</li> </ul>	1
2. Leadership involvement in the supply chain	An effective contractor/supplier relationship usually involves a close relationship between the leaders of the respective organisations.	<ul style="list-style-type: none"> <li>• Organise and participate in supply events and activities</li> <li>• Meet with leaders of supply chain partners formally and informally</li> <li>• Develop subordinates to take on supply chain development roles</li> <li>• Lead by example towards suppliers</li> </ul>	1, 2 and 3
3. Develop a clear client brief and support the client throughout the project.	The supply chain can only function effectively if the client behaves in a way to support the supply chain. In the case of inexperienced clients this requires leadership from the main contractor.	<ul style="list-style-type: none"> <li>• Work closely with the client (and where appropriate the users) to establish values, needs and wants</li> <li>• Do not engage consultants until a clear brief and outline budget has been agreed with the client</li> <li>• If designs are required to assist the client to develop the brief it is preferable that these are limited to sketches rather than costly, over elaborate, drawings</li> <li>• Schedule the activities of the designers and cost consultant to run in parallel in order that the projected outturn cost is known at each stage of design development.</li> </ul>	3 & 4
4. Effectively involve 'users' from the start of the design development process	The importance and value of 'users' involvement at the very start of the design process. In many cases the users will find reading project drawings difficult to comprehend. For example, understanding plan drawings and the relative size of facilities.	<ul style="list-style-type: none"> <li>• Identify all the key users and schedule their involvement into the design development process</li> <li>• Plan design presentations from the point of view of the user.</li> <li>• Consider user visits to similar facilities, developing room mock-ups and producing a 3D walk-through.</li> </ul>	
5. Take time to plan design presentations	If design proposals are clear and presented well at the right time this can assist the project stakeholders' understanding and commitment to the design.	<ul style="list-style-type: none"> <li>• Schedule design development meetings right at the start of the project</li> <li>• Carefully plan presentations and the design development process.</li> </ul>	
6. Appropriately scheduled design freezes	Agreeing a series of design freezes throughout the design development phase helps the client and users time table their involvement and decision making. If adhered to the design freezes will avoid the costs and time delays of abortive designs.	<ul style="list-style-type: none"> <li>• Produce a schedule of design freezes or 'gateways' that will not be passed until the required decisions have been made</li> <li>• Spend time explaining the importance of the schedule to the client and users.</li> </ul>	3



## CONTRACTING STRATEGY AND POLICIES

**Table 6: Contracting strategy and policy issues and actions**

CONTRACTING STRATEGY & POLICY			
Issues	Description	Action	Case No.
1. A clear strategic plan	To be successful a contractor must research and develop a clear strategic plan identifying which construction sectors the business should be operating within over the next 5 to 10 years. From this point the best supply chain organisation structure and partners to deliver construction services can be planned.	<ul style="list-style-type: none"> <li>• Develop a simple vision, mission and values for the business</li> <li>• Be clear in which market sectors the business will operate</li> <li>• Set targets for each market sector</li> <li>• Resource the business through employing the right staff and developing partnerships with the right suppliers</li> <li>• Communicate this to your workforce and suppliers and customers</li> </ul>	1
2. Develop supply chain policies	A thorough review of existing policies to ensure these are in line with the company's contracting and supply chain strategies.	<ul style="list-style-type: none"> <li>• Compare existing, written and unwritten, supply chain policies with the company's vision, mission and values. Take the appropriate action to align the company's policies</li> </ul>	1
3. A clear implementation plan including SMART implementation goals	The development and implementation of an integrated supply chain strategy across the contractor's business to maximise the market opportunities. The development of a set of SMART ( <i>specific, measurable, agreed, resourced and time-related</i> ) implementation targets for supply chain integration.	<ul style="list-style-type: none"> <li>• Select those supply chains in the best state of readiness to change</li> <li>• Create a sense of urgency</li> <li>• Focus the implementation plan on areas for early wins for supply chains e.g. straight forward measures that will give benefits to all parties</li> <li>• Monitor and evaluate progress and take action as necessary</li> <li>• Keep the momentum moving by careful planning and the deployment of adequate resources</li> </ul>	1
4. Work continuity	This is linked closely to a company's contracting strategy. Without continuity of work the reason for developing a supply chain ceases to exist.	<ul style="list-style-type: none"> <li>• Plan for continuity for key suppliers</li> <li>• Keep suppliers informed of changed requirements</li> <li>• Notify suppliers as soon as a possible</li> </ul>	2 & 4
5. Develop supply chain performance indicators	The development and implementation of a range of effective supply chain indicators to measure and compare performance improvement.	<ul style="list-style-type: none"> <li>• Consider using the DTI Construction Key Performance Indicators as a basis for measurement (refer to <a href="http://www.constructingexcellence.org.uk">www.constructingexcellence.org.uk</a> )</li> </ul>	3 & 4

## PEOPLE AND ORGANISATIONAL CULTURE

**Table 7: People and organisational culture issues and actions**

PEOPLE & ORGANISATIONAL CULTURE			
Issues	Description	Action	Case No.
1. Review existing roles and responsibilities	The development of all existing staff roles and incentives to effectively implement the strategy.	<ul style="list-style-type: none"> <li>• Develop the job specifications within each project or framework</li> <li>• Match people to the jobs and identify skill and knowledge gaps</li> <li>• Develop incentives to support effective supply chain behaviour</li> </ul>	5
2. Develop the developers	The development of sufficient key staff with the capacity and capability to monitor, support and develop suppliers and specialist contractors.	<ul style="list-style-type: none"> <li>• Train or hire sufficient numbers of facilitators to work with the company's staff and suppliers</li> <li>• Audit company and supplier development requirements</li> </ul>	2
3. Develop a support framework	The development of a support framework and resources to support business managers develop and implement their integrated supply chains.	<ul style="list-style-type: none"> <li>• Develop support measures to meet the supply chain development needs of individuals and suppliers e.g. supply chain forums, framework and project cluster group meetings</li> </ul>	5
4. Delivering training and development	Developing delivery and learning strategies that are effective and minimise disruption to management and project teams.	<ul style="list-style-type: none"> <li>• Use existing processes and meetings as supply chain development opportunities</li> </ul>	2
5. Developing a continuous improvement culture	The development of a continuous improvement culture throughout the organisation and its supply chains.	<ul style="list-style-type: none"> <li>• Incentivise improvement e.g. a percentage share of the saving</li> <li>• Recognise and celebrate improvements</li> </ul>	3 & 4



## SUPPLY CHAIN PARTNERSHIPS

Table 8: Supply chain partnerships issues and actions, page 1 of 2

SUPPLY CHAIN PARTNERSHIPS			
Issues	Description	Action	Case No.
1. Developing partnerships	An effective partnership requires leadership, mutual objectives, benefits to all concerned, trust, an adequate work stream, a continuous improvement culture, a robust problem resolution process and a real commitment by all concerned to make the partnership work. Partnerships do not just happen they have to be planned, organised and resourced.	<ul style="list-style-type: none"> <li>Identify the supply chains related to the different areas of the company's construction activities</li> <li>Leaders meet with suppliers within each supply chain and get to know their motives and drivers</li> <li>Identify areas of work where partnership will deliver some easily achievable mutual benefits</li> <li>Develop a programme of activities that will develop the partnership and deliver the benefits</li> <li>Implement the programme and jointly monitor and review progress with supply chain partners</li> <li>Repeat the cycle</li> <li>Above all else develop opportunities to get close to your key suppliers.</li> </ul>	2
2. Developing supply chain partners	The development of designers, suppliers and specialist contractors' staff to maximise their potential within the supply chain e.g. first line supervisor development. In many cases the main contractor is much more likely to have the expertise and resources to deliver this development in partnership with its supply chain members. There is also a need to identify and develop suppliers and specialist contractors business with growth potential. Agreeing a mutual development plan to meet the needs of both businesses.	<ul style="list-style-type: none"> <li>Leaders show commitment to the development of supply chain partners in the company's different supply chains</li> <li>Audit supplier and staff development needs</li> <li>Plan joint training and development activities to meet the training needs e.g. joint health and safety update sessions</li> <li>Develop a CITB training plan. Ask a training advisor to visit if assistance is required</li> <li>Identify suppliers with growth potential and agree how a supply partnership might support mutual aspirations. Agree a development plan and assign resources e.g. a company senior quantity surveyor may be able to assist a supplier in developing its financial processes</li> </ul>	2 & 5
3. Maintaining supplier performance	The importance of evaluating suppliers' capacity and capability over time and taking corrective action	<ul style="list-style-type: none"> <li>Monitor suppliers' performance across a range of measures e.g. quality, programme, health and safety, reliability etc.</li> <li>Review performance at appropriate stages in the project</li> <li>Feedback and discuss the review and agree improvement actions.</li> </ul>	1

**Table 8: Supply chain partnerships issues and actions, page 2 of 2**

SUPPLY CHAIN PARTNERSHIPS			
Issues	Description	Action	Case No.
4. Incentivise supplier commitment	<p>The development of a range of incentives to encourage supply chain integration and business improvement.</p> <p>Incentive systems should be simple and efficient to operate. It is relatively easy to develop a system for larger design supply and fix suppliers, but becomes less appropriate the further down the supply chain e.g. labour-only subcontractors.</p>	<ul style="list-style-type: none"> <li>Consider introducing a system of shared savings to encourage business improvement ideas from suppliers</li> <li>Consider introducing non-financial incentives including: <ol style="list-style-type: none"> <li>1. Reduced abortive tendering</li> <li>2. Continuity of workload</li> <li>3. Continuity of teams/long term relationships</li> <li>4. The development of shared processes that are effective and efficient, minimising waste and duplication</li> <li>5. Knowledge of client and less risk</li> <li>6. Future work opportunities</li> </ol> </li> </ul>	2 & 4
5. Forming supply chain clusters or teams	<p>The identification and development of supply chain clusters of specialist contractors and suppliers to minimise interface waste and maximise team working.</p>	<ul style="list-style-type: none"> <li>Identify those contractors that must work closely together in order to maximise production e.g. external envelope, building services, finishing trades</li> <li>Form these contractors into cluster groups as early as possible in the project or framework to advise on value, buildability, tolerances and design and construction processes</li> <li>Consider appointing one contractor as cluster leader</li> <li>Maintain and support the cluster until the end of the work phase</li> <li>Arrange a lessons learnt workshop at the end of the work phase and feed this knowledge into the next project cycle</li> </ul>	5
6. Joint research and development	<p>Identify and develop new products and services with suppliers on high value or high volume construction elements.</p>	<ul style="list-style-type: none"> <li>Identify suppliers and supply areas where joint research and development collaboration will be mutually beneficial e.g. pre-cast concrete components developed by a main contractor and pre-cast concrete supplier</li> <li>Undertake a feasibility study and, if appropriate, produce a development plan for approval and implementation</li> </ul>	2
7. Maintaining the supply chain's health	<p>It is important to monitor the health of the supply chain and take action where necessary.</p>	<ul style="list-style-type: none"> <li>Undertake team health checks to monitor the supply chain's perceptions of leadership communications, strategy. processes over time. <b>Use a simple questionnaire such as that shown in Appendix 3.</b></li> <li>Supply chain leaders review the data and take improvement action where necessary.</li> </ul>	

## BUSINESS PROCESSES

Table 9: Business processes issues and actions, page 1 of 2

BUSINESS PROCESSES			
Issues	Description	Action	Case No.
1. Supply chain communication processes	The development of clear and effective supply chain communication channels. In larger and long-term supply chains the development of fast electronic links via an 'extranet'.	<ul style="list-style-type: none"> <li>Map out the supply chain and its communication links</li> <li>Review the links in terms of effectiveness and efficiency</li> <li>Introduce improvement measures e.g. supplier forum, cluster groups, framework meetings etc.</li> <li>In the case of large projects and long-term framework contracts consider establishing an 'extranet'</li> </ul>	6, 2 & 3
2. Supply chain procurement processes	The development of a new approach to supplier procurement to remove transactional waste while maintaining competitiveness.	<ul style="list-style-type: none"> <li>Review the company's supply chain with the aim of reducing the number of suppliers down to a minimum whilst maintaining flexibility, certainty and competitiveness</li> <li>Review the company's procurement process to establish whether it is designed to deliver best value or cheapest price</li> <li>Talk to suppliers about procurement options and the savings that each might bring</li> <li>Negotiate the best value procurement processes</li> </ul>	3
3. Timely involvement of supply chain members	The importance of engaging all supply organisations and their team members at the right stage in a project's development	<ul style="list-style-type: none"> <li>Identify the specialist contractors</li> <li>Schedule when they should be involved and their contribution at each stage of a project's development</li> <li>Monitor and review the effectiveness of the process and take action where necessary</li> </ul>	3 & 5
4. Material and component logistic processes	Logistics is that part of the supply chain process that plans, implements and controls the efficient, effective flow and storage of resources from the suppliers to installation.	<ul style="list-style-type: none"> <li>Planning logistics on a project or framework supply chain basis rather than being an issue for individual contractors and suppliers</li> <li>Consider the use of a consolidation centre to take bulk deliveries and break these down into just-in-time deliveries to site</li> <li>Consider using a logistics contractor to manage the flow of materials and components and other non-core business activity such as security</li> </ul>	5
5. Material and component procurement processes	A review of material and component procurement to maximise buying improvements across the company's framework contracts through standardisation and national agreements.	<ul style="list-style-type: none"> <li>Analyse the company's buying patterns for materials and components</li> <li>Look for standardisation and buying opportunities with partner suppliers</li> <li>Negotiate best value buying arrangements</li> </ul>	3
6. Process interfaces	It is essential that the managers concerned with following and interfacing trades understand and resolve the quality issues	<ul style="list-style-type: none"> <li>Identify the critical project interfaces</li> <li>Form specialist contractor cluster groups (refer to Table 8 issue 5)</li> <li>Train managers to have technical appreciation of the issues</li> </ul>	5

**Table 9: Business processes issues and actions, page 2 of 2**

BUSINESS PROCESSES			
Issues	Description	Action	Case No.
7. Review of existing procedures and documentation	The adjustment of existing contractual practices, procedures and documentation to reflect and support integrated supply chains.	<ul style="list-style-type: none"> <li>Compare existing, written and unwritten, contractual practices and procedures with the company's supply chain vision, mission, and values. Take the appropriate action to align the company's practices and procedures</li> </ul>	3 & 6
8. Process delivery consistency	In larger companies ensuring that processes are used consistently with members of the supply chain across different regions and frameworks.	<ul style="list-style-type: none"> <li>Establish an effective internal audit system to ensure supply chain processes are 'fit for purpose' and being used consistently across the businesses</li> </ul>	3 & 4
9. Training and developing to understand key processes	The contractor and suppliers to understand how to use each other's procedures effectively.	<ul style="list-style-type: none"> <li>Make time to explain the company's processes, documentation and work patterns to suppliers.</li> <li>Make sure you understand your suppliers processes, documentation and work patterns</li> </ul>	2, 3 & 5
10. Integration with supplier processes	Recognising the benefits that can be gained by harmonising the processes between main contractors and key suppliers.	<ul style="list-style-type: none"> <li>Look for opportunities to harmonise processes to improve productivity</li> <li>Arrange a supply chain workshop to review and harmonise work processes</li> </ul>	3

## Appendix 1: Supply Chain Jargon Buster

Jargon A-Z	Explanation	Comments
Benchmarking	Benchmarking is a technique of searching for industry best practice that leads to superior performance.	The DTI and Constructing Excellence produce a set of Construction Industry Key Performance Indicators to allow the different construction sectors and organisations industry to benchmark their performance.
Building Down Barriers	A multi-government department sponsored project to establish the working principles of supply chain integration in construction. The first phase of the initiative was also sponsored by AMEC and Laing from the private sector and was concluded in late 2000.	The project produced a publication 'The handbook of supply chain management – The essentials. Building Down Barriers' (ISBN 0 86017 546 4) published by CIRIA and the Tavistock Institute in 2000. The book provides an overview and toolset for supply chain integration. It is for client organisations, established contracting, design and project management organisations, and materials and component manufacturers, and all needing to understand construction supply chain integration. The principles established have been used in the development of NHS Procure 21 and the MOD Prime methods of procurement.
Champion	The term used to describe a person who represents a particular organisation or team in a partnering arrangement, or a particular design solution in value management process.	In partnering arrangements organisational 'champions' will monitor and periodically meet to review the health of the partnering team, taking action where necessary. In a value management process team members will volunteer to 'champion' particular ideas during the evaluation phase.
Change	An alteration of an organisation's environment, structure, culture, technology or people.	
Change Agent	A person who initiates and assumes the responsibility for managing a change in an organisation.	
Cluster	A group of suppliers – designers, specialist contractors and suppliers – who take the responsibility for the design and delivery of a major element of a facility, working to reduce costs, improve value and minimise waste.	
Competent	A competent person is someone who has sufficient training and experience or knowledge and other qualities to enable them to properly undertake their duties. Competent persons are those who know what to look for and what to do about something when they find it.	Health, Safety and Welfare Legislation requires competent people and organisations. The CDM Regulations 1994 and the Management Regulations 1999 demand specific requirements for competence.

Jargon A-Z	Explanation	Comments
Consolidation Centre	A consolidation centre is like a retail distribution centre and is so named because it 'consolidates' many different loads onto one site delivery vehicle. With the exception of some equipment and materials that are more conveniently delivered direct to site, it is the one-stop point of delivery for virtually all supplies. It does not hold stock for any appreciable length of time, but it is a useful distribution buffer.	Read 'Construction Logistics – Models for Consolidation' A DTI funded project focused on Terminal 5 at Heathrow Airport. Published by Constructing Excellence, October 2004, ISBN 1-905033-07-9
Construction Lean Improvement Programme	CLIP is a new approach that helps construction companies and their supply chains boost performance and profitability by improving efficiencies on site, in the factory and other related activities. CLIP has created a number of programmes, tailored to the needs of construction but based on a successful Common Approach used across UK industry, which enables companies to make real and measurable improvements to Quality, Cost and Delivery performance, and to improve partnerships with customers and suppliers.	For further information on lean construction and CLIP please view the website <a href="#">Construction Lean Improvement Programme (CLIP)</a>
Cost Plan	The cost plan allocates the project budget to the main elements of the project to provide a basis for cost control. The cost plan should include an estimate of the cash flow for the project and should set targets for future running costs of the facility. The cost plan should cover all stages of the project and is the essential reference against which the project costs are managed.	More information about cost planning and how this fits into project management can be found in the CIOB's 'Code of Practice for Project Management for construction and development' – Blackwell Publishing, ISBN 1-4051-0309-4.
Creativity	The ability to combine ideas in a unique way or to make unusual connections.	Creativity is a prerequisite of <b>continuous improvement</b>
Design Co-ordinator	The person who co-ordinates the work of the design team, specialist contractors and users to ensure that best value, functionality and programme requirements is achieved	On traditional projects this role was undertaken by the architect. In framework contracts the role is undertaken by the lead contractor.

Jargon A-Z	Explanation	Comments
Earned Value Analysis (EVA)	It is a method of using the value of the work already completed on the project to indicate what will be the actual schedule and cost figures at the completion of the project.	<p>Measuring earned value involves three key indicators.</p> <ul style="list-style-type: none"> <li>planned value or budgeted cost for work scheduled- BCWS.</li> <li>earned value or budgeted cost for work performed- BCWP.</li> <li>actual cost for work performed ACWP.</li> </ul> <p>Tracking these values over time, you can determine the past <a href="#">spending</a> and schedule trends for the project.</p> <p>Using this method it is possible to forecast future costs with certainty.</p> <p>Measuring performance using earned value is more effective if it is undertaken as a fully integrated planning and cost exercise.</p>
Effectiveness	Doing the right things and achieving the objectives.	
Efficiency	Doing things right; refers to the relationship between inputs and outputs. Seeks to minimise resource costs.	
Framework Agreement	The current Utilities Directive, and the proposed consolidated public sector Directive, both define a framework agreement as an agreement with suppliers, the purpose of which is to establish the terms governing contracts to be awarded during a given period, in particular with regard to price and quantity. In other words, a framework agreement is a general term for agreements with suppliers which set out terms and conditions under which specific purchases (call-offs) can be made throughout the term of the agreement.	Framework Agreements are being used by both the public and private sector for capital and repair, maintenance and alteration works.
Functional Analysis	A Value Management and Value Planning technique. It can be applied to whole buildings, elements or components and involves the project team (client, designer and contractors) in interrogating its purpose or 'function'.	
Gemba	A Japanese term used in process improvement meaning 'Go to the workplace and seek the facts.' It implies managers walk around and solve problems with the team at the work place and not in the office.	

Jargon A-Z	Explanation	Comments
Guaranteed Maximum Price (GMP)	A GMP contract may best be defined as a lump sum contract with a very tightly controlled variation procedure. GMP contracts are attractive to an employer where certainty of price is more important than lowest price.	In many GMP contracts the variation clause permits a change only in circumstances where additional work is ordered by the employer.
Innovation	The process of taking a creative idea and turning it into a useful product, service or method of operation.	
International Standards Organisation (ISO)	Based in Geneva, ISO is a network of the national standards institutes of 147 countries. The standards are used by organisations and attested by independent auditors.	The main standards used by construction organisations are ISO 9000 Quality Management and ISO 14000 Environmental Management.
Job Plan	A Value Management and Value Planning technique which consists of a five-phase process. The stages are the Information Phase – presenting the project to the team; the Creative Phase - to establish the functional requirements of the structure and to generate design ideas; the Evaluation Phase – where the ideas are reviewed and selected for further development; the Development Phase – where teams develop the selected design ideas, and finally the Presentation Phase – where the team's proposal are presented to the client, reviewed and amended as necessary.	
Key Performance Indicators	The Construction Industry Key Performance Indicators (KPIs) are national data sets against which a project or a company can benchmark its performance	
Knowledge Management	Knowledge management involves the identification and analysis of available and required knowledge, and the subsequent planning and control of actions to develop knowledge assets so as to fulfil organisational objectives.	



Jargon A-Z	Explanation	Comments
Lean Construction	A production-management-based project delivery system based on extension of the manufacturing principles developed by Toyota. These emphasise delivering value to customers whilst consuming the minimum of all forms of resource.	The 5 "R's" of Lean provide a framework and starting point: <ul style="list-style-type: none"> <li>• Redesign – Design for the life-cycle</li> <li>• Reduce – Resource inputs</li> <li>• Recover – Waste resources</li> <li>• Recycle – Products and components at the end of their life</li> <li>• Remanufacture – of new from old</li> </ul>
Life Cycle Cost	Refer to Whole Life Cost	
Logistics	Logistics is that part of the supply chain process that plans, implements and controls the efficient, effective flow and storage of resources, services and related information from the point of origin to the point of consumption in order to meet the customer's requirements.	For more information refer to the Strategic Forum's and Construction Product's Associations Report - IMPROVING CONSTRUCTION LOGISTICS, Report of the Strategic Forum for Construction Logistics Group, August 2005 <a href="http://www.strategicforum.org.uk/pdf/LogisticsReportAugust2005.pdf">http://www.strategicforum.org.uk/pdf/LogisticsReportAugust2005.pdf</a>
Muda	Muda is the Japanese term for waste. Refer to Waste below.	
NHS Procure 21	The main aim for NHS ProCure21 is to promote better capital procurement in the NHS by: <ul style="list-style-type: none"> <li>• establishing a <a href="#">partnering programme</a> for the NHS by developing long-term framework agreements with the private sector that will deliver better value for money and a better service for patients</li> <li>• enabling the NHS to be a <a href="#">best client</a></li> <li>• promoting the use of <a href="#">high-quality designs</a></li> <li>• ensuring that we monitor and improve our performance through <a href="#">benchmarking and performance management</a></li> </ul>	
New Engineering Contract (NEC)	The New Engineering Contract (NEC) is a family of standard contracts – Engineering and Construction Contract (ECC) that embrace the concepts of partnership and encourages designers, contractors and project managers to work together to achieve the client's objectives.	
Outsourcing	A process where a company hires outside firms to handle a part of their business. Outsourcing allows the company to focus more on their core business functions. It is entirely possible to outsource practically every business process within an organisation.	

Jargon A-Z	Explanation	Comments
Package Manager	A construction manager based on a large construction site managing one or more large work packages e.g. groundworks, superstructure, M&E etc.	
Pain / Gain	An agreement between the employer, main contractor and supply chain to share gains in project cost savings and the pain of project losses.	
PPC 2000 The ACA Standard Form of Partnering Contract for Project Partnering	The Association of Consulting Architects developed the PPC 2000 contract. It is the first multi-party partnering contract to be produced following the Government's 'Rethinking Construction' report and initiative.	
Prime Contracting	<p>The Prime Contracting model has been developed by the MoD as part of its review of its procurement regimes, following the 1988 "Strategic Defence Review", and building on the Egan' and Latham' reports as part of a wider government initiative to improve the performance of the construction industry and the public sector as a client.</p> <p>Prime Contracting's objective is to secure better long-term value for money contracts through improved supply chain management, incentivised payment mechanisms, continuous improvement and collaborative working. A Prime Contractor will have overall single-point responsibility for the management and delivery of a project or an integrated estate service and maintenance of the existing infrastructure.</p>	

Jargon A-Z	Explanation	Comments
Prime Contractor	The organisation awarded overall responsibility for delivery of a project through co-ordinating and integrating the activities of the entire supply chain, to meet overall specification efficiently and effectively.	
Procedure	A prescribed series of related steps to be taken under certain recurring circumstances.	
Process Analysis	Process analysis is a technique that builds a fully detailed picture of a process with all the steps clearly identified. Each step is reviewed allowing problems and areas for improvement to be identified.	
Process Control	A quality control procedure in which items are sampled during the transformation process to see whether the process itself is under control.	
Project Execution Plan	An integrated plan combining design and production targets, methods, financial plans, quality, environmental, health and safety (including the health and safety plan) and risk management. The plan is produced by a multifunctional project team at the start of the project process and continuously updated until completion.	The ISO Standards ISO 9001 (Quality Management) and ISO 14001 and BS OHSAS 180001 (Health and Safety Management) assists in facilitating this type of integrated plan,
Project Management Plan	As for Project Execution Plan	As for Project Execution Plan
RIBA Outline Plan of Work	The RIBA Outline Plan of Work 1998 identifies the work stages into which the process of designing building projects and administering building contracts may be divided	The Outline Plan of Work provides a good model framework for running traditional building projects. It also provides a useful checklist for key activities.

Jargon A-Z	Explanation	Comments
Six Sigma	<p>Six Sigma is an approach to process improvement and quality assurance used widely in the service and manufacturing sectors. The approach has five stages:</p> <ul style="list-style-type: none"> <li>• Define the processes</li> <li>• Define customer requirements</li> <li>• Measure performance</li> <li>• Define, measure, analyse, improve and control cycle (DMAIC)</li> <li>• Support for six sigma</li> </ul>	<p>Six Sigma's statistically-based approach forces organisations to look afresh at what they do and how they do it. Six Sigma quantitatively describes how a process is performing. To achieve Six Sigma, a process must not produce more than 3.4 defects per million opportunities. A Six Sigma defect is anything outside customer specifications. To eliminate defects, Six Sigma experts focus on process improvement and variation reduction.</p> <p>Six Sigma is a perfect tool for Total Quality Management. Six Sigma is a method of statistical analysis and performance measurement.</p>
SLAM	Single Living Accommodation Modernisation Project. DE is applying prime contracting principles to the modernisation of single living accommodation (SLAM).	
Supplier Rating	The rating by a customer of designers, specialist contractors and suppliers against transparent quality and cost criteria for different work types. The rating is used to inform procurement strategy and project procurement decisions.	<p>Typically lead contractors rate their suppliers under a number of broad headings:</p> <ul style="list-style-type: none"> <li>• Strategic or Alliance suppliers</li> <li>• Preferred suppliers</li> <li>• Approved suppliers</li> </ul>
Supply Chain	The entire sequence of processes and activities involved in the specification, design, manufacture, construction, commissioning management and operation of a facility. Used by extension to refer to all organisations involved in the entire cycle.	In construction projects the term is usually used to refer to the lead contractor, designers, specialist contractors and suppliers who contribute to the project.
Supply Chain Integration	The process of developing all or parts of an organisation's supply chain into an integrated whole. The aim is to create a virtual organisation through partnership and cooperation.	Typically supply chain integration is achieved through agreeing common objectives and process. It requires a supply chain culture based on trust with open and honest communication and behaviour.
Supply Chain Management	The management of upstream and downstream relationships with suppliers and customers to deliver superior customer value at less cost to the supply chain as a whole.	By adopting supply chain management approach a contractor can become more competitive and increase its profit margin at the same time. It is usual that gains are shared equitably between supply chain members as incentive for improvement.

Jargon A-Z	Explanation	Comments
Sustainable Construction	Sustainability means meeting the needs of today without compromising the ability of future generations to meet their needs. Sustainable Construction aims to apply this principle to the construction industry by providing ways of buildings that use less virgin material and less energy, cause less pollution and less waste but still provide the benefits that construction projects have brought us throughout history.	
Target Costing	An approach to the development of new products aimed at reducing their life-cycle costs while ensuring quality, reliability, and other customer requirements within a specified cost threshold. Target costing is based on a market driven attitude combined with a disciplined effort to involve the whole supply chain in developing products which offer the best achievable balance between through life costs and functionality.	
Technical Co-ordinator	Refer to Design Co-ordinator	Refer to Design Co-ordinator
Through Life Cost	Refer to Whole-life Cost	Refer to Whole-life Cost
Total Quality Management	A management philosophy that is driven by customer needs and expectations and that is committed to incremental continuous improvement in all parts of an organisation. Also known as Continuous Improvement.	At project level it involves the continual search for better ways of carrying out the project. It requires multifunctional teams who understand, map and measure existing work processes, then apply problem solving techniques to reduce waste in all its forms.
Value Analysis	This is the term used to describe a range of techniques that are used following the completion of the project to evaluate the value management.	
Value Engineering	This term describes the techniques that are used in the detailed design stages and construction stages with the purpose of improving, or adding value, to completed designs or building elements.	
Value Management	This term describes the philosophy and range of techniques used to ensure best value is achieved for the client. Value Planning, Value Engineering and Value Analysis are all part of Value Management	

Jargon A-Z	Explanation	Comments
Value Planning	This is carried out right at the outset of a project, prior to the decision to build, or at briefing or outline design stage. Techniques, such as the 'Job Plan' are used to reach a group decision for a proposed design.	
Waste	<p>Waste is the opposite of value. It can be categorised as:</p> <ul style="list-style-type: none"> <li>• Process Waste (e.g. over inspecting)</li> <li>• Business Waste (e.g. of benefit to managers)</li> <li>• Pure Waste (e.g. materials waste)</li> </ul>	<p>Taiichi Ohno, a famous writer on lean production, assembled a list of 7 wastes based on his experience with Toyota. These are:</p> <ul style="list-style-type: none"> <li>• The waste of over production</li> <li>• The waste of waiting</li> <li>• The waste of transporting</li> <li>• The waste of inappropriate processes</li> <li>• The waste of unnecessary inventory</li> <li>• The waste of unnecessary motion</li> <li>• The waste of defects.</li> </ul> <p>Modern writers have identified 'new' waste in organisations:</p> <ul style="list-style-type: none"> <li>• The waste of untapped human potential</li> <li>• The waste of inappropriate systems</li> <li>• Wasted energy and natural resources</li> <li>• Waste materials</li> <li>• Services and office waste</li> <li>• Waste of customers time</li> <li>• Waste of defecting customers</li> </ul>
Whole Life Cost	Whole-life Cost includes all capital and running costs attributable to the development, implementation and operation of a structure or facility over its lifetime. Also known a life-cycle and through-life cost.	

## Appendix 2 Sources of Further Information

Title / Resource	Author / Publisher / Year / Website
Accelerating Change	The Strategic Forum, 2002 <a href="http://www.dti.gov.uk/construction/rethink/report/index.htm">http://www.dti.gov.uk/construction/rethink/report/index.htm</a>
Added Value in Design & Construction	A Ashworth & K Hogg, Longman - 2000
A Passion for Excellence	T Peters and N Austin, Profile Business, 1994
Briefing the team	Construction Industry Board, Thomas Telford, 1997
Building Down Barriers	CIRIA & The Tavistock Institute - 2000
Building Down Barriers Tools	Collaborating for the Built Environment (Be) <a href="http://www.beonline.co.uk/Activities/BDB%5FTools/">http://www.beonline.co.uk/Activities/BDB%5FTools/</a>
Building High Performance Teams	S Pokras, Kogan Page, 1996
Cause and Effect Lean	John Bicheno, PICSE Books, 2000
CITB Construction Skills – extensive labour market and skills information	CITB, <a href="http://www.citb.org.uk/citb_home.htm">http://www.citb.org.uk/citb_home.htm</a>
Client's guide to whole life costing	Construction Clients' Forum, 2000
Code of practice for the selection of main contractors	Construction Industry Board, Thomas Telford, 1997
Code of practice for the selection of subcontractors	Construction Industry Board, Thomas Telford, 1997
Construction Best Practice - see Constructing Excellence	Construction Best Practice, <a href="http://www.cbpp.org.uk/">http://www.cbpp.org.uk/</a>
Constructing Excellence (New name for CBP) – extensive database of information including details of the other CITB ConstructionSkills Supply Chain and Logistic Projects	Construction Best Practice, <a href="http://www.cbpp.org.uk/">http://www.cbpp.org.uk/</a>
Constructing Improvement	Construction Clients' Forum, 1998
Constructing success	Construction Industry Board, Thomas Telford, 1997
Constructing the Team	Latham, Sir M, The Stationery Office, 1994
Construction Lean Improvement Programme	Construction Lean Improvement Programme (CLIP) <a href="http://www.bre.co.uk/service.jsp?id=355">http://www.bre.co.uk/service.jsp?id=355</a>
Control of Risk	CIRIA, 1996
Decision and Control	Stafford Beer, John Wiley & Sons – 1995

Title / Resource	Author / Publisher / Year / Website
EFQM in Practice	British Quality Foundation - August 2002
Health and Safety Executive – extensive health and safety resources	HSE, <a href="http://www.hse.gov.uk/">http://www.hse.gov.uk/</a>
GC/Works/1, Amendment 1: Achieving Excellence	The Government Construction Clients' Panel, The Stationery Office, 2000
Kanban: Just-in-time at Toyota	Taiichi Ohno, Productivity Press 1985
Kaizen	Masaaki Imai Prentice Hall Hardcover - December 1988
Key Performance Indicators 2003	DTI and Constructing Excellence, 2003
Lean Thinking	James Womack, Simon Schuster, New York 1996
Logistics and Supply Chain Management	M Christopher, Prentice Hall, 1998
Management Teams	R. M. Belbin, Butterworth Heinemann, 1981
Operations Management	N Slack et alia, FT Prentice Hall - 31 March 1995
Out of the Crisis	W. Edwards Deming, The MIT Press - 2 October, 2000
Partnering in the team	Construction Industry Board, Thomas Telford, 1997
Partnering literature	The Wigzell Company, CITB, 2002
Plan of works	RIBA, 1996
Project Risk Management	Chapman and Ward, Wiley, 1997
Rethinking Construction: report of the construction task force	Sir John Egan, Chairman, Construction Task Force, DETR, 1998 <a href="http://www.dti.gov.uk/construction/rethink/report/index.htm">http://www.dti.gov.uk/construction/rethink/report/index.htm</a>
Selecting consultants for the team: balancing quality and price	Construction Industry Board, Thomas Telford, 1996
Selecting contractors by value (SP 150)	A Jackson-Robbins, CIRIA, 1998
Successful Delivery Toolkit – achieving excellence	Office of Government Commerce, <a href="http://www.ogc.gov.uk/sdtoolkit/">http://www.ogc.gov.uk/sdtoolkit/</a>
Supply Chain Development for the Lean Enterprise	Cooper and Slagmulder, Productivity Inc., 1999
Standardisation and pre-assembly: client's guide and tool kit (C544)	A Gibb, CIRIA, 2000



Title / Resource	Author / Publisher / Year / Website
Systems Management	J Seddon, 2003, <a href="http://www.lean-service.com/6.asp">http://www.lean-service.com/6.asp</a>
Team Climate Inventory	ASE, 2003
The Fifth Discipline	P M Senge, Century, 1990
The Lean Toolbox	J Bicheno, Picsie Books, 2000
The Pillars of Partnering	Centre for Strategic Studies in Construction, University of Reading, 2000
The New Economics	W. Edwards Deming, The MIT Press, 2000
The Strategic Forum for Construction Toolkit – extensive supply chain resources and links	<a href="http://www.strategicforum.org.uk/sfctoolkit2/home/home.html">http://www.strategicforum.org.uk/sfctoolkit2/home/home.html</a>
The Toyota Way – 14 management Principles	Jeffrey K Liker, McGraw Hill, 2004
Trusting the Team	J Bennett and S Jayes, Centre for Strategic Studies in Construction, University of Reading, 1999
Value management in construction: client's guide (SP129)	J Connaughton, S Green, CIRIA, 1996
Value management in design & construction	J Kelly & S Male, Spon Press, 1993

# Team Check-up

## Introduction

This health check is designed to help teams review their effectiveness. This is what you need to do:

- Use the descriptions below to score your personal assessment of the way the team is working right now. For each bulleted statement below, you need to give a rating between 0 and 5.
- Then share your individual assessment with the other team members to come up with an overall team assessment by calculating the average score you gave to each statement.
- The team should then reflect on the results and develop an action plan to improve your overall effectiveness in working together.

## Scoring

**0 = Strongly Disagree** - Nothing has been done - this does not apply at all to our team.

**1 = Disagree** - We have started on this, but there is a long way to go. The description does not apply.

**2 = Slightly Disagree** - Nearly operational, but some way to go. Doesn't really meet the description.

**3 = Slightly Agree** - Operational, but incomplete. Partially meets the description.

**4 = Agree** - Operational and meets all or nearly all aspects of the description, but not ideal.

**5 = Strongly Agree** - Fully operational and exceeds the description.

## Statements

## Score

### *Applied to the WHOLE project team*

#### **Purpose / Direction**

1. The team has a clear mission/purpose, known by all team members.
2. The team has a vision and success criteria which are challenging, meaningful and exciting to the team.
3. The team understands how the work of the team fits into the larger picture.

#### **Team Leadership**

4. Balances appropriate direction with support and openness.
5. Discusses key issues with the team.
6. Delegates responsibility and leadership to individuals in their area of expertise.

#### **Understanding Differences**

7. Team members understand what their roles are, and where these overlap with other team members.
8. Team members are clear about what is expected of them individually by the rest of the team.
9. Team members are clear about what individual strengths each member of the team brings.

#### **Processes**

10. Team meetings are effective
11. The team has found and implemented better ways of working.
12. The team has an efficient process to solve problems and take decisions.
13. The team has sufficient resources (people, money, time) to do its work.

#### **Communication**

14. Everyone feels their ideas and input are listened to by the rest of the team.
15. Differences and conflicts are resolved openly and constructively.
16. Members' interaction is open and honest.

#### **Relationships**

17. The team's different experiences, skills and gifts are accepted and used.
18. There is trust and openness between team members.
19. New members feel valued and quickly become productive members of the team.
20. The team takes responsibility for its successes and failures, and avoids blaming other people or groups.