OCCUPATIONAL HEALTH & SAFETY … THE CARING CLIENT?

Full Paper

THE BENEFIT TO CLIENTS OF A ZERO ACCIDENT AND ILL HEALTH CULTURE, THE UK'S APPROACH

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ABSTRACT

Clients that play a full role in helping construction achieve a zero accident and ill health record benefit in the process. Clearly the client has an interest in the health and safety aspects of the finished product that their workers and customers will use. Their business will be affected by the whole life costs of use and maintenance. The key to a successful health and safety outcome lies in effective design. The paper considers the role of design and advocates the need for a holistic approach to health and safety that embraces risks that arise not just during construction but also during operation, use and maintenance. The principles of 'Rethinking Construction' and the call for action in 'Accelerating Change' when taken together set out a vision and a route map for industry improvement. The paper expands on the benefits from strong client leadership, integrated team working, and tackling people issues. It focuses on achieving cultural change – and the range of issues that need to be addressed. These lie well beyond the traditional approaches to health and safety. The paper reviews the current UK approach to improving industry performance and reports on the results of the £7bn demonstration project programme, funded by government. Evidence of achievements already made through demonstration projects and performance measurement is presented. The data show that projects which adopt the principles of 'Rethinking Construction' are not only more than twice as safe as the industry average but clients receive better value for money and contractors make more profit. Excellence in health and safety is 'win-win'.

Keywords : Construction; Client; Safety; culture; Design;

INTRODUCTION.

How do clients – those who procure construction solutions for their business needs - benefit from a zero accident culture? Projects that achieve higher levels of safety performance compared to the industry average also deliver higher client satisfaction with both the product and the service. They also deliver better projects, with fewer defects. The performance data reflect a simple truth: companies and projects where health and safety is well managed are more likely to be managing the rest of the business well – and that means delivering value for money services and products to customers. Health and safety is a good proxy for general good management – which is why it is well worth clients – especially inexperienced clients – taking a close interest in the health and safety performance of their supply side during their selection.

Clients – the customers of construction want key deliverables from the supply side. They want projects, buildings and infrastructure developments that are on time, within budget and to the desired quality. In order to achieve this enlightened clients realise they need a supply side that is both productive and profitable. And highly enlightened clients also want their projects delivered safely. To achieve this they take an active interest in their projects and work with the supply side to achieve mutual goals.

HEALTH AND SAFETY – ALTRUISM OR BUSINESS SENSE?

Commercial clients are in business to make a profit, whilst UK Government projects are increasingly driven by the quest for value for money, not lowest cost. Clients want buildings that support their business needs and are flexible and responsive as their needs change. Governments want public buildings and a built environment that reflect their society's values and aspirations, and meet and respond to people's needs with an ever increasing emphasis on effective delivery of public services.

All want value for money – but value can be an elusive concept. UK Government defines 'Value For Money' as the optimum combination of whole life cost and quality to meet the customer's requirement. The UK Government is clear: value for money is not delivered solely when construction is complete - value continues throughout the lifetime of a building.

Sir John Bourn the Comptroller and Auditor general of the National Audit Office recently stated[1] that good design is essential for achieving value for money in construction. And he added "Value is not just about buildings being completed on time and within budget; it is also concerned with ensuring that the costs of operating buildings over their whole life are optimised and that those who use and work in public buildings gain real value from them."

Sound creative design is an essential ingredient if value for money is to be achieved. Design development costs are likely to be small in relation to whole life operating costs and it is through the design process that the largest single early impact can be made on these costs. Excellence in both design and construction together make service delivery more efficient and clearly can have a huge impact on overall health and safety. And the impact of poor design on health and safety is huge. The

[1] Improving standards of design in the procurement of public buildings, Commission for Architecture and the Built Environment/Office of Government Commerce CABE/OGC Report

European Union stated in the introduction to the 1992 construction directive[2] implemented in the UK by the Construction (Design and Management) Regulations 1994[3] (CDM) 'Unsatisfactory architectural and/or organizational options or poor planning of the works at the project preparation stage has played a role in more than half of the occupational accidents occurring on construction sites in the Community' Other studies put the figure as high as 60%.[4]

Altruism however laudable does not pay shareholder dividends! So the reality is that unless clients really understand the business benefits from safe construction projects they are unlikely to be fully engaged in the issue.

'Too few clients view the design and construction of their project as part of their business, nor do they realise that the health and safety of people who construct and maintain as well as those who subsequently work in their buildings are their responsibility. The health and safety of all these people depends on the quality of the design and construction. Indeed, many of the difficulties faced by designers and contractors are the result of unreasonable pressure put on the price and time by the client.'[5]

Unfortunately many clients still think that construction health and safety problems are not –and should not be – their problem – and certainly not their responsibility. These are clients who don't realise that dangerous sites where health and safety is not a priority will be sites that produce a lot of waste – both of materials and time. Dangerous sites are sites where working practices are shoddy; work is likely to be sub-standard as necessary management controls are not in place. Remedial work will be necessary to remove defects – work which itself introduces new health and safety risks – concrete removal, for example, can rarely be done without dust, noise and vibration. Goods delivered to sites left lying around can be damaged or stolen as well as being tripping hazards. Such sites have increased likelihood of being late, over budget and have a high probability of defects that may later prove costly to put right.

One clear reason why clients should take an interest is the simple fact that they are paying for all this waste. There is very little money in the construction industry that has not originated with a client. Clients pay either directly or indirectly. Directly - through cost overruns and the impact on their business of delays. Indirectly – by raised tender prices that result from all the companies on their tender list being similarly inefficient, and wasteful and simply pricing this into their cost estimates.

It is perhaps surprising that clients do not realise how much more they may be paying than they need. A study carried out by the University of Bath[6], for the UK's National Audit Office[7] showed that 73% of Government construction projects were over budget, and 70% were delivered late. But 13 out of 14 clients thought this was an acceptable level of service!

[2] Council Directive 92/57/EEC of 24 June 1992 'Implementation of minimum safety and health requirements at temporary or mobile construction sites.'
[3] The Construction (Design and Management) Regulations 1994, HMSO, ISBN 0110438450.
[4] From Drawing Board to Building Site; ISBN 92 825 8685 5, European Foundation for the Improvement of Living and working Coditions.
[5] Revitalising Health and Safety in Construction, HSC
[6] The Government Client Improvement Study: Agile Construction Initiative, University of Bath, 1998
[7] Modernising Construction, Report by the Comptroller and Auditor General HC 87, Session 2000-2001.

There had to be – and fortunately there is - a better way. The purpose of this paper is to help show clients that they can get a better project – and certainly one that is safer – and at the same time meet their business needs be they hard-headed or altruistic.

SAFETY IN THE PROCESS: SAFETY IN THE PRODUCT

The UK's Royal Academy of Engineering set out, in a 1998 Report[8], a simple ratio about the long term costs of buildings. If the construction cost is 1, the maintenance and building operating cost is 5, but the **business** operating cost (over a 20 year time frame) is 200. Put another way for every $1 spent on construction a company is likely to spend $5 on maintenance and $200 running its business. It is worth noting in passing that design costs are typically 1/10th the construction costs[9] – and it follows that emphasis on design and specification can bring a huge return on investment over the life of a building. Whilst many of these costs may lie in the future what is clear is that the design decisions lock in many of these costs.

Quality in design is an essential ingredient if clients are to achieve value for money. Excellence in both design and construction together make service delivery more efficient, increase buildability and enhance the environment for all. In the UK Design Quality Indicators (DQI's) [10] have been developed to enable clients to measure design quality focusing on build quality, impact and functionality.

For example, well designed and maintained:

- Buildings are a business asset and enhance productivity. They also:
  - provide safe access and egress
  - help reduce occupational stress and create a sense of well being
  - can be safely cleaned e.g. safe access for window cleaning, roof repair;
  - can be safely maintained e.g. to reduce the risk from legionella.
- Offices are more productive with less time off work for sickness, stress or other ill health;
- Hospitals are places where people get better quicker;
- Schools create an environment in which education and learning can flourish;
- Urban environments help reduce crime and enhance quality of life for all.

Design excellence clearly helps deliver the clients business needs. It should also help deliver improved health and safety. This is why the UK government places so much importance on design excellence. And it is the construction process that turns design ideas into practical reality. The scale of the problem is highlighted by comments made by the Royal Institute of British Architects (RIBA) to the National Audit Office.[11] RIBA questioned whether there were sufficient incentives for designers to 'design out' hazards, as this would lead to an increase in costs to the designer which could not necessarily be passed on to the client. The impression given is that bad design is cheaper than good design!!

When things go wrong it is often the client that carries the cost, and bears the responsibility. For example in a prestigious London bank refurbishment the foyer was fitted out with a highly polished granite floor. When it rained the floor was so slippery

[8] The Long term costs of owning and using buildings, The Royal Academy of Engineering, 1998
[9] 'The industry formerly known as Construction' Richard Saxon CBE, Reading Construction Forum
[10] www.dqi.org.uk
[11] Improving Health and safety in the Construction Industry, HC 531 Session 2003-4: 12 May 2004

and the risk of an accident so high it had to be taken out of service – at considerable expense and embarrassment to the client. In another example a brand new local authority library, which had won an architectural award had to close when light bulbs needed replacing, as the designer had not considered how they could be safely reached! The fact is that when things go wrong the public tend to remember who the client was – long after those involved in its construction have left the site.

It is clear that a more holistic approach is needed to achieve a zero accident culture. It should consider safety of the product during its operation, maintenance and repair, as well as an integrated team approach to the construction process.

UK CONSTRUCTION : HEALTH AND SAFETY RECORD.

Over the last 40 years or so the number of fatal accidents resulting from UK construction work has fallen significantly (Fig. 1) but still remains unacceptably high. Figure 1 does not show incidence rates, and needs to be considered against the backdrop of construction activity at the time. With long term data there are subtle issues about year on year comparisons of data – definitions of what is or is not a 'construction' accident change. But in the main the definitions are broadened rather than narrowed. Hence over a long time frame the likelihood is that improvements are masked rather than overstated.

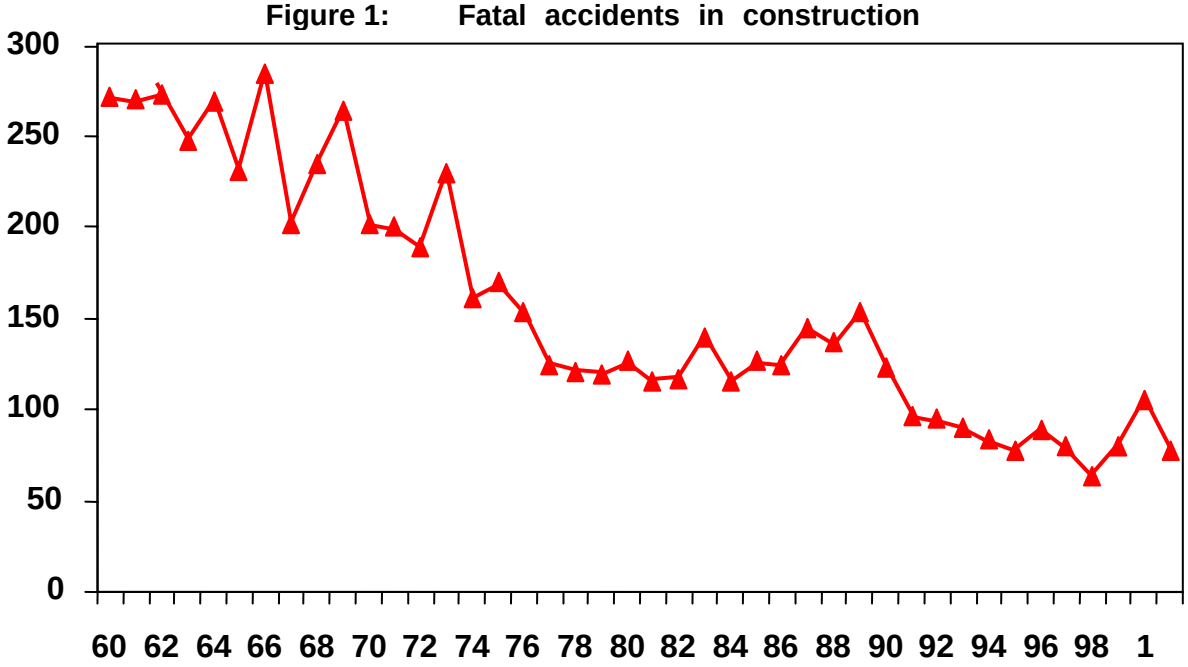
Fig. 2 shows the rise in labour productivity[12] (given at 1995 prices to adjust for inflation) over a similarly long term. Taken alongside fig. 1 it helps dispel the myth that improving safety performance can only be made at the expense of productivity.

Comparison of the downward trend in construction accidents (fig. 1) with the UK Health and Safety Executive's model for long-term reduction in accidents is helpful. (Fig. 3)[13] Taken together it is clear that the emphasis on physical aspects of safety in the 1960's brought about a significant reduction in accidents; the regulatory emphasis on management systems during the 80's and early 90's also made a contribution. CDM also began to have a significant impact on some of the cultural aspects – especially with the emphasis for the first time on designer duties, and the benefits of collaborative working.

If a zero accident and ill health record is to be achieved emphasis must be placed on tackling the underlying cultural factors that contribute to the way the industry operates. And this must, of course, be done without any let up in the emphasis on the provision of physical safeguards and effective risk management. Some might think a zero accident record is not realistic yet some companies do report many million man-hours worked without any lost time incidents.

[12] Source: DTI Construction Statistics Annual and the Housing and Construction Statistics Annual
[13] Author's interpretation taken from 'Successful health and safety manahemen. HS(G)65, HSE

Figure 1: Fatal accidents in construction



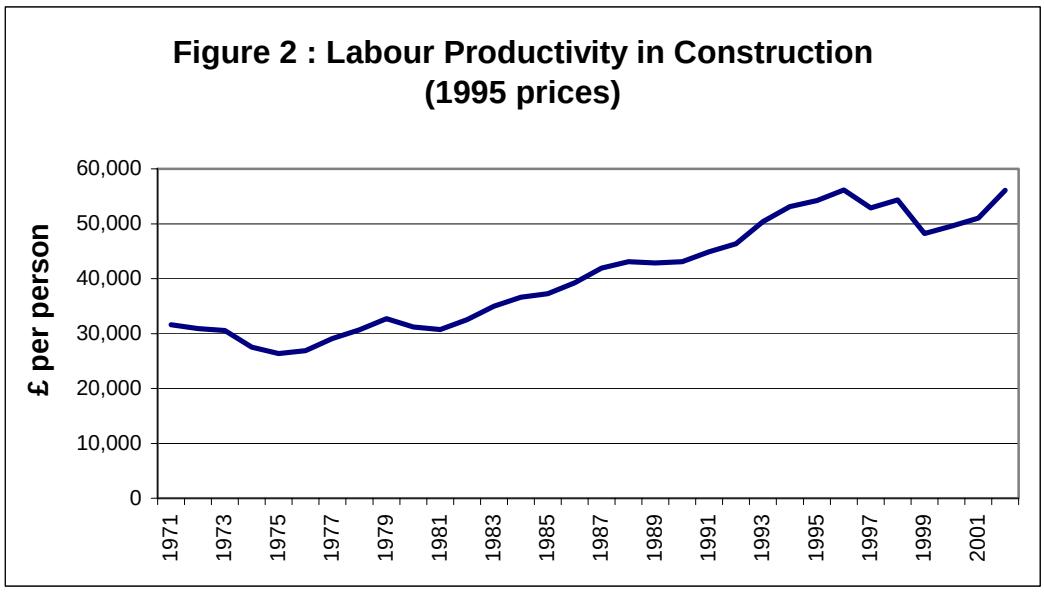
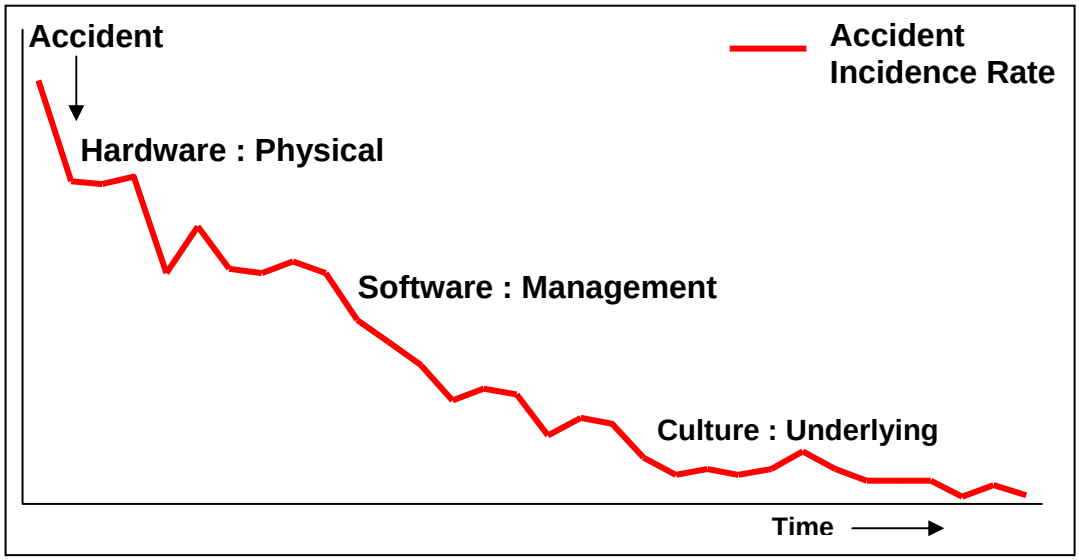


Fig. 3 : Management of Health and safety



RETHINKING CONSTRUCTION

The problem as seen by the UK (although by no means confined to the UK) in 1998 was that taken overall the industry under-performed. It:

- frequently failed to satisfy its clients;
- had low margins of profit and did not attract the interest of investors;
- failed to invest in its people through training;
- failed to invest in research and innovation;
- had an unacceptable health and safety record;
- had difficulty in recruiting and retaining its workforce;
- delivered projects often of poor quality, delivered late and over budget.

Tony Blair's newly elected Labour government asked Sir John Egan, then chairman of BAA (British Airports Authority) to chair a task force comprising leading industrialists who were major clients of the construction industry to make recommendations for improvement. They produced a report '*Rethinking Construction*'[14]. It set targets for annual improvement.

These were:

- a reduction in Defects and Accidents by 20%;
- a reduction in Capital Cost and Construction Time by 10%;
- an improvement in Predictability by 20%; and
- an improvement in Productivity and Turnover and profits by 10%.

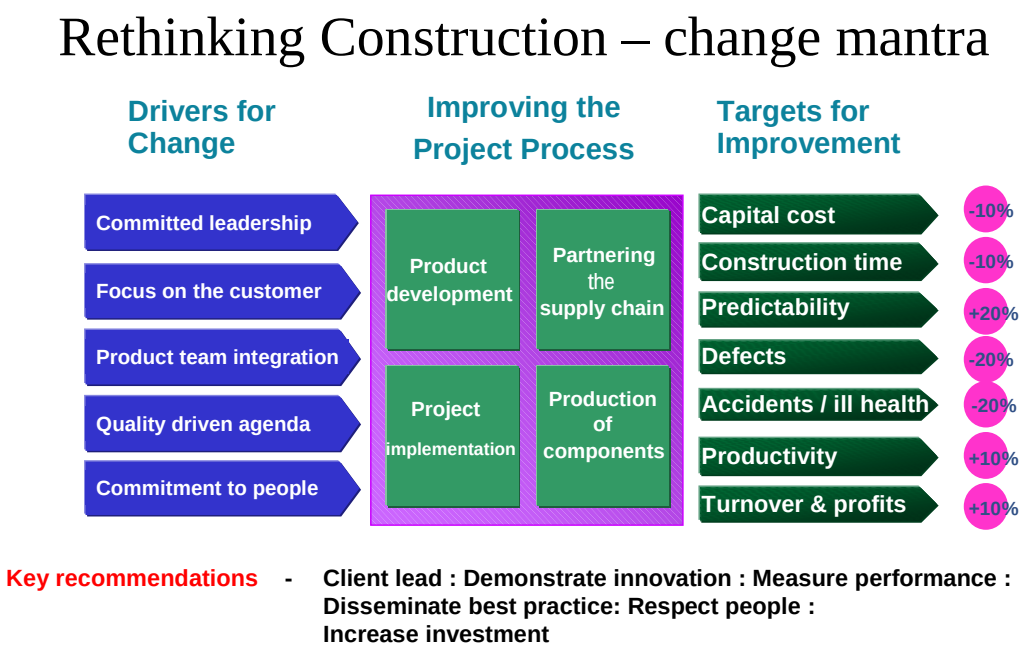
These targets are for improvement year on year. Many said – and some still say – that it can't be done. By any benchmark these are tough targets for any company to meet. But the fact is that some are achieving it – and the evidence has come both from Rethinking Construction's demonstration project programme and from the work of the DTI funded 'Construction Best Practice' programme.[15] It also identified five drivers for change and four ways of improving the project process.

On health and safety it said 'The industry must provide decent and safe working conditions and improve management and supervisory skills at all levels. The industry must design for ease of construction making maximum use of components and processes.'

Rethinking Construction needed to pass what Sir John Egan called 'the dustbin test'. Was it simply to be the latest in a long line of government reports into the ills of the industry that produced a flurry of interest but no long lasting change. The UK government thus called for 'demonstration projects' which were to be real industry projects where those involved committed to achieving in practice the Egan performance targets; as well as undertaking to share the lessons learned in putting the Rethinking principles into action through published case studies, involvement in workshops and best practice clubs. Under the '*Rethinking Construction*' banner 'The Movement for Innovation' (M4I), the Housing Forum and the Local Government Task Force were born. 374 demonstration projects representing a combined construction value over £7bn have now participated in this movement.

[14] 'Rethinking Construction': The report of the Construction Task force. ISBN 1 85112 094 7
[15] The organisations Rethinking Construction and Construction Best Practice have now merged to form 'Constructing Excellence'

Figure 4



But just trying new ways of working is not enough. Measurement is vital. Only through benchmarking against the 'best in class' and by measuring can the industry truly demonstrate that it really is successfully improving its performance and improving its business. All Demonstration Projects (now renamed as '*Demonstrating Excellence'*) strive to out-perform the *'Rethinking Construction'* improvement targets. Performance is measured using the Key Performance Indicators (KPIs) published by Constructing Excellence. This allows projects not only to monitor progress on a regular basis it also provides the opportunity to benchmark against the rest of the industry.

ACCELERATING CHANGE

'*Accelerating Change*'[16] published in September 2002 is a report by the Strategic Forum for Construction, then chaired by Sir John Egan. The Forum's membership represents the whole industry – clients, contractors, suppliers and product manufacturers, and trade unions. '*Accelerating Change*' reinforces and complements '*Rethinking Construction'*. Reinforces because it endorses the rethinking principles for change, and complements because it focuses in on the three major themes that can drive change and remove the barriers to change. And it does that for the first time within the context of a shared vision for the industry.

Taken together these two reports set out a clear vision for the future of the UK construction industry, set targets for achievement, and provide a programme for change that will result in a safer, more profitable and productive industry, and add value to business and to society in general.

[16] 'Accelerating change' A report by the Strategic Forum for Construction ISBN 1 898671 28 1

VISION

The Strategic Forum for Construction set out its vision for the industry. This was the first time the whole industry had come together to work out what it was trying to achieve. The vision statement was:

> "Our vision is for the UK construction industry to realise maximum value for all clients, end users and stakeholders and exceed their expectations through the consistent delivery of world class products and services."

The phrase 'exceeding expectations' raised a few eyebrows – some thought that meeting the clients' needs was enough. We might do well to remember the words of Michelangelo when he said 'The greatest danger for most of us is not that our aim is too high and we miss it, but that it is too low and we reach it.'

In order to realise its vision the industry must -

- Add value for its customers**;**
- Exploit the economic and social value of good design and construction to improve
    - Functionality; and,
    - Enjoyment for end users;
- Become more profitable and invest in its future; and
- Enhance the built environment in a sustainable way to improve the quality of life.

To achieve such an industry, 'Accelerating' identifies three key action themes – client leadership, integrated team working and people issues.

CLIENT LEADERSHIP

Client leadership is important as a driver for change. Clients need to be fully engaged from the outset. The UK's Office of Government Commerce (OGC) sets out some key messages for management leadership,[17] stating that success is associated with projects (inter alia) that:

- Are clearly the best option to meet the business need;
- Reflect the business ethos; *(including the safety culture)*
- Have client and supply side commitment to clearly defined objectives *(which include health and safety)*
- Are managed through personal accountabilities; *(management of health and safety and safety policy)*
- Plan, identify and obtain sufficient resources to deliver the project *(make suitable provision for health and safety)*[18]

The industry, too, needs to respond by putting its clients' needs at the heart of the design and construction processes. With a clear understanding of both their 'business needs' and their environmental and social responsibilities, clients will better understand how their construction procurement will impact on their ability to perform better for their own customers.

[17] Achieving Excellence in Construction, Initiative into action. OGC. www.ogc.gov.uk
[18] Author's italics to link client leadership with impact on health and safety.

Clients need to engage at an early stage with their integrated teams so as to ensure effective deployment of their combined skills and experience and release their ability to deliver successful, safe projects. And crucially they need to select the team based on factors including their health and safety record. The best of the industry's professionals are playing a key role in driving this process along.

Accelerating Change also recognised that most clients are not expert – nor is it likely if they only engage with the industry once that they will become expert. To be successful they need help and guidance. The report concluded that clients should have access to independent advice – that is professional advice that is not financially dependent on the outcome.

Expert or not, clients have a key role in ensuring that health and safety is not compromised in the process. Inexperienced clients will generally have the greatest difficulty deciding exactly what they want in advance of work starting. The trick is to ensure everyone on the team knows that there will be changes, and that mechanisms for managing them are established early on. Whenever meetings are held to consider design changes it is essential that the impact on health and safety, including buildability, is carefully considered.

The Clients' Charter[19] was developed by leading clients, following a government challenge.[20] It sets out general principles whose adoption can assist both clients and the supply side to work effectively together. These are – leadership and focus on the client; product team integration; quality; and, people. It identifies that 'Setting high standards for health and safety and respect for people' brings benefits to clients.

Charter clients that achieve excellence in the people category have selection criteria and performance monitoring in place for suppliers that requires them to have:

- established policies and practices for successful delivery of health and safety on their projects;
- a policy setting out site condition standards;
- a workforce that is properly trained and certificated;
- clear policies for recruitment, retention and succession planning for their workforce;
- monitoring systems in place with regular review of data.

And such clients also need to have a commitment to train and develop their own staff.

INTEGRATED TEAMS

The benefits gained from integrated team working are emphasised in *Accelerating Change*. Integrated teams include: clients, product manufacturers, designers (architects and engineers), contractors, specialist sub-contractors, consultants and other professionals. And it emphasises the importance of these teams staying together, building up long term relationships based on trust, and delivering improved services to clients through partnering and strategic framework agreements.

Team working helps unlock potential and release value. Integrated Teams are better placed to 'get it right first time' and 'design out' safety risks. Industry professionals –

[19] The Clients' Charter, formerly Confederation of Construction Clients (CCC), now Construction Clients Group (CCG)
[20] Nick Raynsford MP – challenge to the Industry, M4I Conference 1999

particularly designers are making a major contribution. Increased use of off-site fabrication, and product standardisation are delivering benefits in quality, predictability and safety – and reducing time on site. Integrated teams working closely together (especially in partnering arrangements) have reported a considerable reduction in the old style adversarial approach. Such teams create a positive work environment where the contributions of all members are valued. They are encouraged to innovate, tackle problems co-operatively, and share the benefits. The emphasis is on solving problems collaboratively rather than arguing who is to blame. And there has been a substantial decrease in litigation on projects embracing non-adversarial practices.

Integrated **team** working is similar to but not the same as supply **chain** integration. Each team member is likely to have relationships with a supply chain. The benefits of working with integrated supply chains can greatly enhance the ability of the organisation to play an effective team role. Integrated teams can also exploit the additional potential that comes from cooperation between distinct supply chains. A tool kit has been developed to help increase uptake of this approach.[21]

PEOPLE ISSUES

Thirdly the industry needs to value, and respect the people who work for it. Companies that have embraced *Rethinking Construction* are raising the value they place on those working for them. They are creating a culture of respect for their people, this helps them recruit and retain a workforce that is committed and fulfilled, a workforce that is free from the threat of accident or ill health. Safety is now at the top of the agenda. And the link to the business improvement agenda is clear. As Sir John Egan has said 'Pre-planned, well designed projects, where inherently safe processes have been chosen, which are carried out by companies known to be competent, with trained work forces will be safe: they will also be good, predictable projects.'[22]

The UK industry needs to attract 75,000 new people a year simply to replace those who are leaving or retiring. The UK industry also needs people with <u>new</u> skills – skills in e-commerce – skills in information technology and communication…even customer care skills…skills which are taken for granted in other industries but which are still rare in construction. But without such skills it becomes difficult to ensure full stakeholder and end user involvement in the design process. We need to see greater diversity in the workforce – more women and people from visible ethnic minorities. The construction industry needs to attract people from across the social spectrum. The proportions of women and ethnic minorities in construction are woefully low, especially on site. The industry needs to recognise the positive benefits that diversity in all its manifestations can bring to the workplace.

The business case for doing this is clear. Companies that respect their workforce – and we have developed a comprehensive set to measurement tools to help them assess this – will end up with more productive, safer and healthier workers, who will contribute to on cost, on time and on quality delivery, which leads to more satisfied clients, which helps such companies win more work, enhance their reputation in the market place, and through increased profitability they can afford to invest in their workforce – which helps make them more productive.

[21] www.strategicforum.org.uk
[22] 'Accelerating change' ibid

RESULTS

Quite frankly since '*Rethinking Construction*' was published the results have been startling, and indeed have exceeded most expectations.

These demonstration projects show what the best can achieve (table 5). The safety record in 2001 was twice as good as the industry average and by 2003 it was 3 times as good. A new measure introduced in 2004 shows that the percentage of all companies achieving a zero accident incident rate is 42% for all construction and 78% for all CE demonstration projects. And the demonstration projects show an increase in productivity from £37,000 mean added value/employee in 2001 to £55,000 for 2004. So safety is not being achieved at the expense of productivity: on the contrary improved productivity is strongly linked to improved safety performance. These projects are also delivering higher client satisfaction with both product and service; they are delivering fewer defects, and are more predictable in cost and time. The results help prove the thesis that good health and safety makes good business sense; and that projects with exemplary health and safety are well managed projects that satisfy their clients. Year on year data need to viewed against a backdrop of enormous change across the whole industry, not just the Constructing Excellence demonstration projects. In some cases the gap has narrowed between the best and the rest, but at the same time the best have gone on getting even better.

Detailed case studies are published on the web at **www.constructingexcellece.org.uk** which also gives details of the tools and training programmes that have been established to help people through the change, and continuous improvement process.

The cost savings are also substantial. The demonstration projects amounting to £7bn by turnover have achieved additional profit of £140m, reduced construction costs of £420m and reduced costs of accidents of £363m. (Figure 6)

Figure 5. Constructing Excellence demonstration project performance compared to All Construction.

Headline KPI	Measure	All Construction 2003	Constructing Excellence Demonstrations 2003	Constructing Excellence Enhancement
Client Satisfaction - product	% Scoring 8/10 or better	78%	90%	+15%
Client Satisfaction - service	% Scoring 8/10 or better	71%	86%	+21%
Defects	% Scoring 8/10 or better	68%	87%	+28%
Safety	Mean accident incidence rate/100K employed	1097	428	+156%
Cost Predictability - design	% On target or better	65%	71%	+9%
Cost Predictability - construction	% On target or better	52%	64%	+23%
Time Predictability - design	% On target or better	53%	66%	+25%
Time Predictability - construction	% On target or better	59%	69%	+17%
Profitability	Median profit on turnover	5.8%	6.0%	+0.2% percentage points
Productivity	Median value added/employee (£000)	£31	£36	+16%
Cost	Change compared to 1 year ago	5.0%	-2.9%	+7.9%
Time	Change compared to 1 year ago	1.0%	-2.4%	+3.4%
Environmental Impact - Process	% Scoring 8/10 or better	51%	76%	+49%
Environmental Impact - Product	% Scoring 8/10 or better	28%	62%	+121%

Figure 6.

Demonstration Projects' performance 4 year average	**Rethinking Construction Demonstration Projects (£7bn)**	**Construction Industry, as a whole (£70bn)**
Profitability Rethinking Construction projects achieve **2 percentage points** more profit than the industry average	**Increased profit** from Demonstration Projects = **£140m**	**Increased profit** if one-third of industry take up = **£466m**
Construction Cost Demonstration project costs are **6.0%** lower than industry average	**Reduced construction costs** from Demonstration Projects = **£420m**	**Reduced costs** if one-third of industry take up = **£1.4bn**
Safety Demonstration project accidents are **61% lower** than industry average. Estimates put accidents costs across the industry at **8.5%** of turnover	**Reduced costs of accidents** from Demonstration Projects = **£363m**	**Reduced costs** if one-third of industry take up = **£1.2bn**

CONCLUSION

The UK construction industry is undergoing massive change and at the heart of this change is a new focus on the underlying cultural issues that have to be addressed if accidents are to be eliminated. There are real signs that the old adversarial culture that lead to increased risk, which delivered projects that were late, over budget and of low quality, is changing. The National Audit Office – the UK's government spending watchdog – has recently reported on Construction Public Finance Initiative contracts[23]. It found in 1999 that 73% of projects exceeded the price agreed at contract, and in 2002 that figure had dropped to 22%. A similar improvement was reported for projects that were delivered late. Significant improvements in quality were found.

Many clients and construction supply teams are embracing the changes set out in Rethinking Construction – and are delivering real benefits to their shareholders through better performance; their clients through increased satisfaction; and their workforce through improved pay and working conditions.

It is important to understand a crucial issue about the change agenda. It is not simply about doing what is done now better: it is about doing things differently. Those on the sidelines wondering whether to embrace change need only to consider one question. "Is the gap between you and your competitors narrowing or widening?" The evidence is now clear. Unless 'Rethinking Construction' principles are embraced and companies start to work in the new way they will be gradually … if not quite quickly … left behind. Such companies will find it more difficult to compete and win work on the back of a proven track record of success, and will become less profitable. The road to success is clear – the message for success is clear – unless companies embrace the change process they may not be doing anything at all!

In the UK many companies are embracing change. There is, however, one remaining challenge: those involved in design need to learn how they can contribute to reducing construction health and safety risks. And designers need to consider their contribution not just in relation to the construction process, but for the finished product, which is ultimately the client's responsibility.

Finally on health and safety it is clear that this holistic approach is paying real dividends in fewer accidents, and in the longer term fewer cases of occupational ill-health.

[23] National Audit Office, PFI: Construction Performance, HC 371 Session 2002 – 2003:5th Feb. 2003