An Investigation into Sector Specific Support Programmes for EMS Implementation in SMEs
– A Case Study of the Construction and Building Industry

by

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Abstract

EMS implementation by SMEs has been poorly practiced due to a mismatch between generic standards and support mechanisms and the diverse nature of SMEs. The advent of BS 8555 seems to have triggered drastic changes on that disappointing trend by challenging the traditional barriers and some industries started acting in concert with such scheme. This paper investigated the effectiveness of ongoing attempts to bridge the gap with a sector specific support programme, Easy Access Environmental Management in the UK construction and building industry as a case study.

To identify the key issues for SMEs within the sector, feedback forms collected after the training workshops of the programme were utilised as a primary data source. This was combined with an extensive literature review. Questionnaires were then designed to derive further detailed data from practitioners.

Results revealed great appreciation for the programme by SMEs in terms of information provision and delivery methods, irrespective of its size and job type. Respondents already enjoyed intangible “soft” benefits out of the programme whereas tangible “hard” benefits had not yet come to many of the parties. There were some notable differences in their actual performance level due to their size or past experience with formal standards but in general they maintained high momentum towards further performance improvement.

The research can assure of great penetration that sector specific support programme had to SMEs. Although more time should be allowed for their EMS to yield envisaged benefits, the dissertation is optimistic about greater contribution of sector specific approaches to further EMS uptake by SMEs in the face of evidence identified.
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Abbreviations and Acronyms

BRE  Building Research Establishment
BSI  British Standards Institute
CEC  Commission of the European Communities
CIEF Construction Industry Environmental Forum
CIRIA Construction Industry Research and Information Association
CPN  Construction Productivity Network
DEFRA Department of Environment, Food and Rural Affairs
DPA  Data Protection Act
DTI  Department of Trade and Industry
EA   Environment Agency
ECI  Environmental Condition Indicator
EMAS Eco-Management and Auditing Scheme
EMS  Environmental Management System
ENDS Environmental Data Services
EPE  Environmental Performance Evaluation
EPI  Environmental Performance Indicator
EU   European Union
GDP  Gross Domestic Products
IEMA Institute of Environmental Management and Assessment
IiP  Investors in People
IMS  Integrated Management System
INEM International Network for Environmental Management
ISO  International Organisation for Standardisation
MPI  Management Performance Indicator
OPI  Operational Performance Indicator
PDCA Plan, Do, Check and Action
QMS  Quality Management System
SBS  Small Business Service
SCM  Supply Chain Management
SME  Small and Medium-sized Enterprise
SPSS Statistical Package for Social Sciences
UK   United Kingdom
WRAP Waste & Resource Action Programme
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“Vita brevis, ars longa”

(Hippocrates)
1.0 Introduction

1.1 Weak uptake of EMS by SMEs

Micro, small and medium-sized enterprises (SMEs)\(^1\) are, nationally and locally, a very important component on the business scenes meanwhile they also account for a large share of growing environmental concerns. They collectively make up 99.9% of businesses, 58.5% of all employment and 51.3% of turnover in the UK (DTI, 2005). They are also estimated to generate as much as 60% of commercial waste and 80% of pollution incidents in England and Wales alone (NetRegs, 2005)\(^2\)

Over the last few decades increasing legislative requirements as well as consumer pressures have led to rapid developments in the formulation and implementation of environmental policies at the corporate level. The advent of environmental management system (EMS) shed light on those facing difficulties in finding a systematic way of achieving commitments to environmental management within their existing organisational structure. As each company had designed its system to meet its own particular needs, these systems differed widely and there have been efforts in 1990s to standardise EMSs, resulting in introduction of EU Regulation of Eco-Management and Auditing Scheme (EMAS) and international standard of ISO 14001. The number of those registrations / certifications has been rapidly increasing and EMS practice is now widespread in a range of sectors including public bodies and even universities. However, such serious pursuit of environmental improvement has predominantly been seen

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\(^1\) There are a number of definitions (Hillary, 1999), amongst which the EU one has been widely used and is adopted here too: less than 250 employees; either an annual turnover not exceeding 40 million European Currency Unit (ECU) or an annual balance sheet total not exceeding 27 million ECU; and an independent enterprises, i.e. 25% or more of the capital or voting rights cannot be owned by larger enterprise/s (CEC, 1996). Accordingly larger companies correspond to those with 250 employees or more

\(^2\) In both cases SMEs were classed as employing fewer than 250
amongst organisations of larger scale and, despite the Government’s backing, actual EMS uptake in SMEs has been “patchy at best and down right miserable at worst” (Hillary, 1999: 561) considering the role they play in an environmental realm.

1.2 Barriers of EMS implementation in SMEs

Welford (1994) introduced four-level classification of SMEs (Table 1.1) based on his survey with more than 100 SMEs on manufacturing industry. More than ten years old though it is, this table nevertheless helps systematically analyse the current status of SMEs’ development and was considered still valid as a core source of discussion.

Table 1.1 Four-level characterisation of SMEs

<table>
<thead>
<tr>
<th>Group Name</th>
<th>Characteristics</th>
</tr>
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| Ostrich    | • Not recognise the environmental challenge which they face  
            • Assume that their environmental performance has a negligible impact on the world  
            • Regard the environmental issues as an unnecessary annoyance  
            • Think that their competitors will also do nothing |
| Laggards   | • Recognise the environmental challenge but feel unable to do anything about it  
            • Environmental considerations not incorporated in business strategy due to other more pressing demands on them  
            • Not know how to proceed though acknowledging the benefits of environmental improvement to society as a whole |
| Thinkers   | • Recognise the environmental challenge and know that in time they will have to do something about it  
            • Wait and see what others are doing  
            • Think about the sorts of actions they should undertake  
            • Not yet willing to spend money in uncertain area |
| Doers      | • Put clear, proactive environmental strategies in place  
            • Plan ahead and see the need to change their products and processes  
            • Understand the links between the demands of society and the role they need to play in becoming a successful company |

Sources from Welford (1994: 161)

3 For example, DEFRA’s Government position statement (2005)
It can obviously be interpreted that the further down the table, the closer to achieve successful EMS installation. These four groups will be treated differently, because in essence the problems they face, their motivations and the instruments most likely to be effective in supporting them should be quite distinctive.

*Case of Ostrich*

As can be seen in the table, the crucial defect for *ostrich*, which comprised the largest group in his survey, is lack of awareness. This feature is presumed mainly attributable to lower public profile and sheer numbers of such group. Less likelihood of being targeted by pressure groups or other external stakeholders help foster their indifferent attitudes on environmental issues (Hillary, 1999) whereas infrequent inspections – “an SME can anticipate being inspected about once every 80 years” (Gunningham, 2002: 23) – allow many SMEs to slip through the regulatory net and to be left untouched by environmental policy initiatives. In fact their awareness of legislative requirements has been generally poor, with only 14% of SMEs surveyed were able to name any environmental regulation unprompted (NetRegs, 2005). Findings in other reports during 1990s were also in line with this tendency (Hutchinson & Chaston, 1995; Merritt, 1998).

The optimistic belief and complacency of SME managers that current environmental practices within their organisation are adequate hence need not be improved upon may mirror such ignorance. This is coherent to the view that a significant number of SMEs only deal with environmental matters after they become a serious threat (Hutchinson & Chaston, 1995; Kirkland & Thompson, 1999; Holt *et al.* 2000). Rather promising is the fact that there has been a slight increase in awareness⁴ (NetRegs, 2005), therefore it is

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⁴ Only 7% of businesses readily acknowledged that they undertook activities that could cause harm to the environment in 2005 survey, whereas 6% in 2003
anticipated some proportion of groups have moved downward off the ostrich zone over the last decade.

**Case of Laggards**

The problem which laggards face is manifolds. There have been a number of papers which delved into SMEs’ reluctant behaviour towards EMS uptake and almost unanimously advocated amongst them is that lack of financial resources is the major factor (Wellford, 1994; Palmer & van der Vorst, 1996; Hillary, 1999; Kirkland & Thompson, 1999; Tilley, 1999; Gerstenfeld & Roberts, 2000; Schaper, 2000; Gunningham, 2002). The capital input for SMEs often comes from owner-managers themselves due to on-going difficulties in raising outside capital (Schaper, 2000). Cash flow is therefore high on the list of concerns and their investment decisions must pay for themselves quickly. There may be, short though, periods when they do have resources available to invest in green technology but few of them anticipate having this luxury continually. Large capital investment is impossible for SMEs where its failure could result in the failure of the business.

Larger firms have the capital to employ external consultants or even in-house expertise in environmental matters. This is in contrast to the multi-tasking SMEs which crucially lack technical abilities as well as managers’ disposable time for future planning or what is often called ‘non-core’ activities. Some laggards do seek for support predominantly from Local Authorities or Environment Agency (EA) to deal with environmental issues (Smith et al. 2000; NetRegs, 2005), but almost half (47%) said they wanted more help (NetRegs, 2005). Moreover, others are less likely to contact such bodies that have a regulatory role though acknowledging them as being the most ideal advisors because of
the fear of inspection on legislative compliance and resulting possible prosecution (Holt et al. 2000).

Perceived inadequacy of supporting tools and standards exacerbate their problems.
There has been a trenchant criticism as to suitability of EMS standards for SMEs because of its inherently strategic and bureaucratic approaches to management (Hutchinson & Chaston, 1995; Palmer & van der Vorst, 1996; Gerstenfeld & Roberts, 2000). For those who are accustomed to working on an *ad hoc* basis, which is allegedly the case of most SMEs, setting up such formal systems with heavy documentation requirements is too much a daunting task and virtually unfeasible. As for assisting instruments, likes of handbooks or seminars tend to be too generic for SME managers to immediately perceive the relevance of the material to their firm, resulting in failure to answer the very specific questions those managers might have (Holt et al. 2000).

*Case of Thinkers*

*Thinkers’* hesitation can be a more-or-less rational decision rather than the one based on ignorance. Obviously introduction of EMS involves strengths and weaknesses, opportunities and threats. And positive attempts to implement EMS can only be made when the estimated benefits outweigh costs. Successful EMS surely enables substantial cost savings through resource & waste minimisation or effective procurement policy, but many SMEs remain sceptical or unconvinced about its effect (Merritt, 1998; Hillary, 1999; Simpson et al. 2004). Prominent Slovic *et al.* (1980)’s psychometric approach of risk argued that perception of risk was strongly correlated with the factor of catastrophic potential (dread) and familiarity (known-unknown). Applying to this case, *thinkers* in face of EMS experience both dread (possibility of bankruptcy when attempts in vain)
and unfamiliarity (uncertainty on actual effects / impacts) therefore it may not be surprising they regard EMS as too risky. An interviewee from Kirkland’s 1997 survey expressed what seemed to be a common feeling: “I don’t want to be on the cutting edge – let somebody else make the mistakes first” (Kirkland & Thompson, 1999: 134). During the survey by Merritt (1998) one SME company from engineering industry frankly confessed that it would prefer to lose the contract rather than implement an EMS in response to the notification from a local authority that future contracts would be contingent on contractors seeking EMAS registration. These negative complexes seemed to prevail even when supporting programme was demonstrably in SMEs’ own financial interest and/or backed by generous financial subsidies (Sheldon, 1998). For example, the Small Company Environmental and Energy Management Assistance Scheme (SCEEMAS), having aimed to provide SMEs with a 50% subsidy for the costs of consultancy fees in the implementation of EMAS, received in three years only 270 applications and assisted only seven companies (the scheme was subsequently abandoned).

Insufficient permeation of environmental regulations into SMEs implies there is no recognition of a level playing field. A major concern for SMEs has been the possible unjust benefits that could accrue, over the more responsible firms acting in good faith, to free riders and cowboy operators who flout their environmental responsibilities (Tilley, 1999; Petts, 2000). In such case, willingness to allocate resources for legislative compliance was spoilt and an attitude of “ignorance is bliss” seemed to exist (Hillary, 1999).

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5 Mentioned in the Ostrich paragraph (page 3)
**Case of doers**

Apparently they are already on the right track and expected to be the leaders for going beyond compliance with the regulatory status quo. No notable hindrance can be found for those environmental champions.

**Further consideration – diversity of SMEs**

Although Welford’s classification was useful in assessing the actual deficiencies SMEs face at each progress level, consideration of another dimension would be necessary to investigate their actual needs. ‘SME’ is a catch-all term and in fact they are considerably diverse in size and type of business. The most common criterion among researchers is the number of employees, which is divided into three categories:

- “Micro” employing less than 10 people;
- “Small” employing 10 to 49 people; and
- “Medium” employing 50 to 249 people.

Thus it can arguably be interpreted from this definition that the collective term ‘SME’ includes from a family-run corner shop in King’s Lynn to a multi-national corporation with several branch offices in Far East. With such diversity in size, there are inevitable variations between SMEs in terms of resource, both human and capital, availability, organisational structure as well as awareness of potential environmental impacts of their business activities or legislative requirements. Size also affects the practical feasibility of environmentally benign activities for smaller firms. For example, due to their small scale of operation, SMEs sometimes have to accumulate a sufficient amount of waste for a certain period of time before recycling companies will collect (Walley, 2000).

Under such circumstances, lack of storage space as well as health & safety / fire
regulations inhibits their recycling attempts (Friedman & Miles, 2001).

Diversity can be seen in their range or type of business activity too. SMEs are in essence heterogeneous hence both behaviour and performance varies considerably between sectors. By and large, manufacturers tend to have a more complete response to environmental initiatives than those in retail or service sector (Hutchinson & Chaston, 1995; Schaper, 2000; Simpson et al. 2004). Recent survey has revealed that businesses within the recycling sector were most likely to have implemented practical measures to prevent harming the environment, whereas the least likely sectors to have taken action to reduce their environmental impact were land transport and construction (Fig 1.1).

Fig 1.1 Percentage of businesses who have undertaken practical measures to reduce their environmental impact

Sources from NetRegs (2005: 3)
1.3 Failure of conventional approaches

With those facts in mind, the standards and/or conventional support and guidance have been thus far deemed too generic for most SMEs to derive any useful information out of them (Gerstenfeld & Roberts, 2000). Fanshawe at the EA noted “many of the ‘good idea’ to help SMEs that have been developed to date do not fully address the specific needs of SMEs” (Fanshawe, 2000: 254). Kirkland & Thompson (1999) pointed out that widely available ‘templated’ EMSs can be inappropriate for most SMEs without making suitable modifications to it, in other words EMSs must be ‘customised’ in order to be assimilated. One of the most significant impediments SMEs have been facing in implementing EMS is lack of human resources – i.e. expertise (Hillary, 1999). The large majority of SMEs simply do not possess the knowledge, skills or solutions necessary to embed available instruments into their individual cases and subsequently allow them to fully integrate the environment into their business practices (Tilley, 1999). Thus it has been clear that it being unfeasible for regulators to police or for supporting bodies to provide services to inherently heterogeneous SMEs in a uniform manner without compromising its effectiveness and relevancy.

1.4 Attempts to tackle the problems – supply chain management

Rutherfoord et al. (2000) pointed out that UK Government policy is based on voluntary action and an emphasis on business benefits from environmental improvements. Such departure from traditional command-and-control approaches allowed self-regulation by each industry, and the government’s role is now to encourage businesses down this path by awareness-raising activities and dialogue with industries. Under these circumstances, organisations and industries began to take the lead on bridging the gap between the
support service provided and the one actually required by SMEs.

One of the most influential movements is ‘Greening the Supply Chain’ by larger enterprises. This concept is an extension of the traditional definition of green procurement by broadening green procurement to include not just the purchase of products but also activities and services. Its application has extended to the procurement of suppliers, contractors and subcontractors operating on behalf of supply chain leaders. Lambert et al. (1998: 1) defined supply chain management (SCM) as: “The integration of key businesses from end user through original suppliers that provides products, services, and information that add value for customers and other stakeholders”.

Hands-on experience of such larger “blue chip” enterprises with solid environmental management helps SMEs along the supply chain demonstrate compliance with legislative requirements (Gunningham, 2002). Increasing pressure from the customers can help SMEs realise its necessity of having comprehensive systems to manage their environmental performance. Larger firms in turn enjoy benefits in risk reduction and cost containment as the range of their environmental responsibility can be deemed reaching further up the stream of their product lifecycle. Beyond that, SCM efforts can produce strategic and competitive benefits. Leading companies cite examples where

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6 Policy incorporating procurement into environmental improvement programmes, primarily focusing on buying products using ‘green’ criteria such as is the product produced locally or how much waste is generated and is it recyclable.

7 Before its introduction of formal EMS Printech (Irish printing company) began to receive a questionnaire from major customers regarding its environmental activities. At that time there was no system for communicating this information, and it took one month to research the answers and one week to process the information. Printech saw that they need to be able to reassure their customers that they were minimising the environmental impact of their activities (INEM, 1997).

8 One in five of B&Q’s products was timber and concerns over the management of forest resources made B&Q the target of a high profile Friends of the Earth (FoE) campaign in the late 1980s. B&Q was held directly responsible for destruction of the rainforests – yet it was not B&Q going out into the rainforests, chainsaw in hand. The impact was many steps back up the supply chain, but the responsibility was B&Q’s simply because they were purchasing the products which the timber was ultimately being made into, and B&Q was expected to do something about it (Jamison, 1996: 24)
environmental initiatives with suppliers have enhances quality, increased innovation and raised productivity (Lipmann, 1999). Burgess (1998) suggested that SCM offers competitive advantage in better lead times, customer service and supply chain synergy. Sheldon & Yoxon (2006) stressed SCM in regard to a further step forward to achieving continual improvement for those whose EMS became mature and came near saturation within the organisation.

1.5 Introduction of BS 8555

The UK Government added impetus on this movement by formulating and encouraging the use of a new British Standard BS 8555, whose six-phase staged approach not only facilitates EMS uptake by SMEs at their own pace but also provides supply chain leaders with a yardstick to measure SMEs progress (Gascoigne, 2002).

The standard, BS 8555: 2003 Environmental Management Systems – Guide to the phased implementation of an environmental management system including the use of environmental performance evaluation, was launched after the pilot scheme called Project Acorn, which was managed by the Acorn Trust (not-for-profit company with multi-stakeholder representation). The scheme was funded in the main by the UK Department of Trade and Industry (DTI) and supported by the UK Department of Environment, Food and Rural Affairs (DEFRA) and ran until March 2003. Before its withdrawal any SME or non-SME could use the Acorn Method™ – a step by step approach to environmental concerns based on recognised international standards – with the help and support of either of two service providers, White Young Green Environmental or Groundwork (The Acorn Trust, 2003).

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Fig 1.2   Overview of the phased implementation of an EMS using BS 8555

*Sources from BSI (2003) ©*
Under the BS 8555, as was in the Acorn Method™, the implementation process is broken down into a series of different phases (Fig 1.2), and each phase has a number of stages to go through. When the participants have completed all the stages of the phase an independent audit is conducted by accredited inspectors, frequently the same personnel who are already employed by certifiers (i.e. ISO 14001) or registrars (i.e. EMAS). The inspections can thus build towards formal EMS development, if desired, but the great benefit of these schemes is that SMEs can choose to maintain their management approach at a more appropriate level (ideally Phase 3) indefinitely (Sheldon & Yoxon, 2006). In this situation companies would not have progressed to a full EMS, but would nevertheless have recognised certificates to prove their commitment to both existing key customers (i.e. supply chain leaders) and potential new markets. Another important characteristic is that the overall approach in the early stages is to involve the organisation in management of their environmental impacts by using environmental performance evaluation (EPE) techniques. This means that the commitment to improvements can be acted upon straight away without waiting for all the EMS elements to be in place and the organisations have access to the business and environmental benefits at the earliest possible stage (Sheldon & Yoxon, 2006). This aspect should be very important in gaining and maintaining momentum in terms of management system development because it is difficult for SMEs in particular to keep environmental issues to the forefront of the business agenda while waiting for an EMS to produce results.

To sum up, SMEs with poor recognition about their environmental impacts (Ostrich) will be awakened by the guidance from mentor companies and the BS 8555 will make great contribution to facilitating its process. Meanwhile its unique step-by-step and
“bite-sized chunks” approach will attract and encourage SMEs with financial or time constraints (*Laggards*) towards positive and steady environmental improvement. *Thinkers* will also be prompted for its immediate use owing to the new standard’s ‘low hanging fruit’ (Sheldon & Yoxon, 2006: 234) characteristic and will increase familiarity and internal assurance that build on the initial successes.

Preceding discussions about barriers of EMS implementation in SMEs had identified three dimensions in considering the status of individual companies – degree of development, variety in size and diversity in sector.

ISO 14001 states in its introduction that ‘It is intended to apply to all types and sizes of organisation and to accommodate diverse geographical, cultural and social conditions’ (ISO, 2004). Thus its three-dimensional coverage as a support programme for EMS implementation can be viewed in the following way (Fig 1.3a). The image can be interpreted in such a way that, in principle, the smaller the total volume of the cube, the more likely to be specific the information / support programme is to the corresponding enterprises within the cube. Hence this large dark block mirrors the criticism of being too generic and often being deemed irrelevant to SMEs (Hutchinson & Chaston, 1995; Palmer & van der Vorst, 1996).
Fig 1.3a   Diagram showing the range of coverage by ISO 14001

Fig 1.3b   Diagram showing the range of coverage by BS 8555
BS 8555 in contrast stresses in its introduction that ‘… the standard makes particular references to small and medium-sized enterprises (SMEs)’ (BSI, 2003). By using the same concept to compare the feature of ISO 14001, the new standard’s coverage is presented in (Fig 1.3b). Doers, having already reached at the highest stage, no longer need this step-by-step guidance and no specificity in terms of business types was yet stipulated in the standard. As can be seen, the volume of the cube has been decreased significantly.

### 1.6 Movement for industry specific approach

Thus far not many literatures have empirically evaluated effectiveness of BS 8555 due probably to the novelty of the standard. However, given the fact that there has been a steady increase in number of registration\(^{10}\) and a variety of companies – e.g. butcher, painter / decorator, hotel, property management company and food manufacturer – have become accredited (Brady, 2006), the scheme seems to have started to make an impact in the UK. This versatility of BS 8555 was also identified in the research by Birchall (2005). Further encouraging is the trend of certain business sectors taking initiatives to promote BS 8555 uptake within the industry\(^{11}\). This phenomenon makes good business sense because while assistance to individual firms provides the enterprises with an identifiable benefit the economy as a whole also benefits.

In fact Clark (2000) stressed that in order to successfully reach SMEs the message must be formulated in the right language – using industry terms and motivations via the current routes through which SMEs directly receive information. Gerstenfeld & Roberts (2000) also advocated this industry-led approach and argued that a support mechanism

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\(^{10}\) As of 30 June, 2006 58 organisations registered (IEMA, 2006)

\(^{11}\) e.g. sectors of horticulture, shipyards and cleaning support services are preparing (Burr, 2006a)
for SMEs must allow them to learn and implement in their own language and using their own frames of reference. Therefore those SMEs still struggling in assimilating the requirements of BS 8555 in a relevant style should be greatly benefited by the industry’s mediation and this is where the main focus of this research lies. Industry-driven support programmes specified all three dimensions mentioned above should in theory be perceived fittest to SMEs and have the highest potential of improved EMS uptake by them. This hypothesis is to be verified with use of an active example.

Hutchinson & Chaston (1995: 19) made a concrete suggestion of “the development of more appropriate ‘best practice’ models which would be more applicable to each specific industrial sector than the broad concepts defined in BS 7750 and EMA\textsuperscript{12}” so that the environmental impact of the SMEs be reduced. The UK construction and building industry had developed such a programme – so-called Easy Access. This programme is a training course tailored specifically for BS 8555 implementation in the construction sector and is successfully in place. Applying to the consistently used cube image, its coverage can be viewed in Fig 1.3c and this small slice well mirrors its specificity of the programme.

Prior to detailed discussion of the programme, introductory information of the construction and building sector is given in the following chapter.

\textsuperscript{12} The then EC Environmental Management and Auditing scheme, currently known as Eco-Management and Auditing Scheme
Fig 1.3c  Diagram showing the range of coverage by Easy Access
2.0 UK construction sector

This chapter outlines characteristics of the UK construction and building sector with regard to environmental impacts as well as industry’s approach to tackle these issues, leading to the introduction of sector specific EMS implementation support programme Easy Access.

2.1 Contribution to environmental issues

There is a spectrum of environmental issues associated with the construction sector’s activity, i.e. construction or demolition of buildings or civil infrastructure, land levelling, civil works and road maintenance etc.: massive volume of energy consumption, a large amount / variety of material usage and waste generation, emissions from heavy vehicles and other transports, indoor and outdoor air quality, pressure on both water quality and quantity, handling and treatment of hazardous substances, wildlife and cultural heritage protection, public nuisances including noise, odour, vibration, light. The list could further continue.

The construction and building industry in the UK provides a tenth of the UK’s gross domestic product (GDP) and employs 1.4 million people in many types of business (EA, 2003). 99.9% of such businesses in number is comprised of SMEs (SBS, 2004). But they are responsible for nearly a third of all industry-related pollution incidents (EA, 2003). Construction and demolition waste alone represent 19% of total UK waste (EA, 2003), only about 50% of which has currently been recycled\(^\text{13}\). The energy used in constructing, occupying and operating buildings represents approximately 50% of

\(^\text{13}\) Recycling rates in some other European countries are satisfactorily high: 90% in Denmark, 83% in Germany and 87% in Netherlands (Williams, 2005).
greenhouse gas emissions in the UK (EA, 2003). Despite such high stakes, practical measurements to reduce the environmental impacts have been very poorly undertaken within the sector as a whole (Fig 1.1) and the environmental efficiency of buildings in the UK remains lower than in many other European countries (EA, 2003). What signifies the role of this industrial sector is the fact that the Government seeks to build over 150,000 new houses per annum to 2016 in England (House of Commons, 2005). This expected growth represents urgent needs for building sectors to shift development towards delivering more sustainable homes and construction.

2.2 The industry’s initiative

Calls for collective action within this diversified and fragmented industry had been sounded in mid-nineties\(^\text{14}\) in order to produce better work, higher productivity and a higher level of efficiency. In response to those publications majority of the contractors began to form collaboration / partnership agreements with their suppliers and clients (Akintoye et al., 2000) and the Construction Industry Research and Information Association (CIRIA) has been playing an important role in assisting the formation of more robust supply chain networks. For instance, French Kier Anglia had launched an initiative with CIRIA to green its supply chain with a scope of ISO 14001 certification at a later stage, which involved awareness raising seminars for their main partners, site visits aiming to identifying specific environmental problems and demonstrating good practices and annual reviews with use of their performance indicators (ENDS, 2001).

CIRIA is a not-for-profit research association, a leading provider of performance improvement products and services to all stakeholders in the modern built environment. Like the French Kier case, a collaborative research programme is run and managed by

them addressing key aspects of business practice and bringing together industry partners. The results of the research are published and CIRIA also encourages the application and improvement of best practice through its networks, such as the Construction Industry Environmental Forum (CIEF) and Construction Productivity Network (CPN).

The industry tied up with other regulatory bodies and introduced a number of assistant services to meet SME’s specific needs. The Envirowise FastTrack visit is a free, confidential on-site waste review of construction sites by the experienced panels, which will highlight areas where the company could save money, consume less resources, reduce environmental impact and comply more easily with environmental legislation. Quick Wins, produced by Waste & Resources Action Programme (WRAP), provides details of products and materials that offer the opportunity to increase recycled content thus will help making more sustainable and cost effective product choice. When it comes to EMS uptake and development support within the industry, two options are currently available. Constructing Excellence\textsuperscript{15} has developed a programme called “Fast Track 14“, which provides low-cost solution aiming to enable organisations to achieve ISO 14001 certification within six-month period. This programme would, if anything, be suited for determined organisations whose goals are already set towards formal EMS certification rather than those pursuing systematic environmental management with a great deal of flexibility, leaving formal certification / registration as an option. Another programme, Easy Access Environmental Management, has been designed for the latter type of organisations.

\textsuperscript{15} a DTI sponsored not-for-profit organisation
2.3 Easy Access Environmental Management

This package has been compiled through one of the Research Project by CIRIA and is based on the Acorn Method™, which has subsequently been superseded by BS 8555. The package comprises of detailed guidance notes, template documents and top tips, along with a series of training workshops to provide additional assistance to companies implementing the Easy Access approach. Those materials have been developed and piloted with selected supply chain members of mentor companies within the industry. The guidance covers the stages and requirements involved in completing Phases 1-3 of BS 8555 (2003 version) and Phases 4-6 plus integration with other systems (2004 version) (see Fig 1.2). Details of each stage are shown below.

Phase 1  *Securing commitment and establishing the baseline*

Stage 1  Gaining and maintaining management commitment

Stage 2  Baseline assessment

Stage 3  Developing a draft environmental policy

Stage 4  Developing environmental indicators

Stage 5  Developing an initial draft EMS implementation plan

Stage 6  Training, awareness and the initiation of culture change

Stage 7  Initiation of continual improvement

Phase 2  *Identifying and ensuring compliance with legal and other requirements*

Stage 1  Identifying relevant legal requirements

Stage 2  Identifying other requirements

Stage 3  Checking compliance

Stage 4  Ensuring ongoing compliance
Stage 5  Developing compliance indicators

**Phase 3  Developing objectives, targets and programmes**

Stage 1  Evaluation of environmental aspects and associated impacts
Stage 2  Finalising the environmental policy
Stage 3  Developing objectives and targets
Stage 4  Establishing indicators for environmental performance evaluation
Stage 5  Developing the environmental management programme
Stage 6  Developing operational control procedures
Stage 7  Launching the environmental policy, objectives, targets, and indicators

**Phase 4  Implementation and operation of the environmental management system**

Stage 1  Finalise management structure and responsibilities
Stage 2  Training, awareness and competence, plans and records
Stage 3  Establishing and maintaining formal communication
Stage 4  Documentation and record-keeping
Stage 5  Reviewing and testing emergency preparedness and response
Stage 6  Developing indicators for the EMS

**Phase 5  Checking, audit and review**

Stage 1  Establishing audit programmes
Stage 2  Correcting non-conformances and taking preventive action
Stage 3  Management review
Stage 4  Improving environmental performance
Stage 5  Improving the EMS
Phase 6  EMS acknowledgement (second-party, ISO 14001, EMAS)

Stage 1  Preparing for external assessment of the management system
Stage 2  Review of baseline assessment
Stage 3  Review of implementation
Stage 4  Developing reportable information
Stage 5  Auditing for EMAS
Stage 6  The EMAS environmental statement

Integration Phase  Integration with other system – in particular, health and safety management and quality management

Stage 1  Background information and deciding what to integrate
Stage 2  Integration model: plan
Stage 3  Integration model: do
Stage 4  Integration model: check
Stage 5  Integration model: act

N.B. The Integration Phase is additional to the requirements of BS 8555 and can be undertaken at any time


Stage profile of the guidance notes includes concise information as to rationale of the activity (why); timing (when); personnel in charge (who); methods (how); additional support tools including relevant template number; list of suggested inputs and typical outputs; and correspondence notes to BS 8555. Contents of the guidance documents are in-depth and comprehensive with full use of diagrams, working examples and extracts of clauses from relevant standards and legislation. Templates are simply designed in
either Microsoft Word or Excel format, allowing practitioners to easily modify to suit their existing working culture or to insert only the required data and information unique to the organisation. Top tips are documented in a bullet-point style for each stage of the phases so that practitioners carry out pre/re-view studies effectively throughout the process of implementation. Training workshops are delivered by recognised experts and are set up chiefly in response to the requests from clients or main contractors wishing to support their supply chain members (Burr, 2006b). The event not only outlines each stage of the phases but also provides opportunities for interactive exercises using EMS template documents.
3.0 Research setting

This section elaborates on aim and objectives of the research followed by detailed description of methodology used with intensive reference to source/use of data and questionnaire design.

3.1 Objective and rationale of the research

This research aims to investigate the effectiveness of industrial sector specific support programmes for EMS implementation in SMEs, using Easy Access Environmental Management in the UK construction and building industry as a case study. As has been outlined, recent emergence and gradual, but steady, diffusion of sector specific support programmes should, in theory, have been welcomed and have led to promising boosts on EMS uptake in SMEs. However, the actual impact of such scheme has thus far rarely been investigated with use of empirical research data. The attempt of this research can therefore help better understand the practical influence of this much needed solution and, if any, provide sources of further improvement for successful support programme. It is hoped this contribution in turn help enhance the overall EMS uptake by SMEs at large as well as those in the construction sector.

As with EMS, support programmes should also be subject to continuous improvement hence ideally function in a cyclical manner (Fig 3.1). It is indeed a positive feedback process where SMEs (shown as the active stakeholder in the diagram) achieve good environmental management owing to assistance from environmental help organisations (including CIRIA, in this particular case); best practices through their good EMS being reported back to the supporting body for the purpose of refinement; revised programme further facilitate EMS implementation and permeate amongst more members of SMEs.
Here three components are deemed to be the key to maintaining this loop rock solid. Firstly, inputs into SMEs: Specificity is the vital lifeline of Easy Access therefore perceived relevancy and satisfaction level of the programme matters. Unwelcoming attitudes will significantly damage the cycle. Secondly, outputs from SMEs: Actual effectiveness of the programme ought to be valued by SMEs’ behaviour. To know is one thing, to do is another. It is easier to declare intent than to carry it out. Ultimate target of the support programme is to help improve environmental performance of SMEs, which should be triggered by positive behavioural change. Lastly, information feedback: information regarding inputs and outputs, both positive and negative, has to be brought back to providers in order to constantly check the level of relevancy and effectiveness.
The assistance providers must then reflect such findings onto their support programmes. Fanshawe purposefully drew the feedback loop arrows in the diagram with heavy double lines because this does not always occur in reality. And this feedback process had not been sufficiently practised in the current Easy Access programme either.

With these in mind this research has set three specific objectives.

- To assess the deviation between the information provided by the programme and the one sought for by SMEs;
- To analyse the actual behaviour improvement by the programme that helps environmental performance improvement of SMEs; and
- To identify possible sources of suggestions for further improvement of the programme

The effectiveness was investigated primarily from the view and the performance of participants in the programme to discover whether they felt that the structure, guidance and tools given were appropriate, as well as whether any tangible and intangible effects on their environmental performance have been found after and/or throughout the course. Further analysis was carried out as to which specific groups have most or least benefited out of the programme to put forward recommendations for refinement of the scheme.

3.2 Data and methods

The first step was to obtain data on participants’ satisfaction level of the Easy Access package. This was easily done since CIRIA consistently undertook questionnaires to all the participants at the end of every workshop session and, thanks to the mediation by
Mr Burr\textsuperscript{16}, agreement had been reached with CIRIA as to copies of such feedback forms being provided. Within those feedback forms, respondents were asked the following questions.

 ✓ Overall how they would rate that event (closed style)

 ✓ How well the Easy Access Environmental Management training met their requirement (closed style)

 ✓ Whether they felt that workshop would prove beneficial in your normal work (closed style)

 ✓ Whether they felt that workshop would prove beneficial in relation to the project (closed style)

 ✓ What elements of the Easy Access Environmental Management training they found most useful (open style)

 ✓ What elements did not meet their expectations (open style)

 ✓ Whether there were any areas which they felt should have been covered which are not (open style)

Total number of the feedback forms obtained was 179 and simple statistical analyses had been undertaken on the closed-ended questions using the statistical package for social sciences (SPSS). They proved very useful and reliable secondary data because summarised information was a vital source of tentative conclusions on appropriateness of the courses. The major weakness of this review approach was attributed to the fact

\textsuperscript{16} A senior consultant of White Young Green Environmental, one of the approved delivery partners of Easy Access
that not all the users of Easy Access programme decided to attend the training course hence the data did not necessarily represent the views of all. However, CIRIA was unable to provide the whole list of organisation which purchased the Easy Access package due to the Data Protection Act (DPA) 1998. Therefore the approach was considered as best practically feasible for the purpose.

Next approach was to compile a self-completion questionnaire. Its purpose was to cover all above objectives. Tentative conclusions drawn from the feedback forms were tested by the questions with more depth and width. Certain level of time margin must have been required for some effects to become recognisable, that is, questions regarding their performance were more appropriate to be asked than in the feedback forms which were collected soon after the training session.

The rationale for choosing a questionnaire was chiefly due to its time effectiveness. They can be quickly administered and sent out in one batch, whilst other techniques such as interviewing would take a long time to conduct with a sample of the same size (Bryman, 2001). Besides, respondents can complete a questionnaire whenever they want and at their own speed. It was thought this aspect would especially be favourable for busy multi-tasking SME managers.

Out of 179 feedback forms, 85 individual names were identified as possible questionnaire targets because most of them had attended multiple numbers of training workshops. Original intention was to gain the contact list of all from CIRIA and dispatch the questionnaire by postal mail. However, that plan was impeded again due to the DPA 1998. Acquisition of the respondents’ contact addresses was accordingly dependent upon an individual search on the internet and initial telephone contacts were
then sought in order to make sure whether the collected information was right as well as to obtain, if possible, consent to joining the survey by explaining the purpose of the research. As a result of the telephone contacts, 52 individuals’ whereabouts were identified\(^{17}\) and email addresses were provided from 48 of them. Eventually the questionnaires were sent out by means of four postal mails and 48 emails, associated with a covering letter explicitly explaining the reasons for the research why it was undertaken and why the recipients had been chosen and guaranteeing the strictest confidentiality (see Appendix 1).

Reminder emails had been sent to non-respondents approximately two weeks after the initial emails, reasserting the aim of the survey and importance of the recipients’ contribution to the survey (Bryman, 2001). Another week after that, further follow-up telephone approach had been conducted asking whether the emails had successfully reached and if recipients still intended to complete the questionnaire.

### 3.3 Questionnaire design

Two of the primary sources of information were used to select appropriate subjects for the question.

- Feedback form analysis. As the number of questions to be asked was limited, priority of the subjects was decided partly around the outputs seen in the open-ended questions, which revealed SMEs’ expectation, interest and awareness. It was meant to investigate whether those expectations were being met and whether the awareness had led to any changes in the organisation.

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\(^{17}\) Some personnel were no longer with the enterprise. The number of recipients was restricted into one where multiple number of people participated in the workshop from the same organisation
• Literature review. Although no published literatures on the Easy Access programme were found, there are a decent amount of research papers dealt with construction supply chains and SME support programmes. Suggestions and findings in those articles were incorporated into the questions to test their legitimacy and relevance.

Once topics had been decided the questionnaire was made up with 35 questions, mixture of open and closed questions, eight pages long (see Appendix 2). It might have been felt too ambitious to ask questions with such volume. But it was presumed that concerns be alleviated by the fact that the research was contacting a specific group of SMEs rather than randomly chosen. Hence favourable responses were expected provided the purpose of the research was clearly communicated.

Design of the questionnaire was predominantly composed of closed style questions. Bryman (2001) suggested that a mailed questionnaire should comprise as few open questions as possible, since people are often deterred by the prospect of having to write a lot. Taking into account that recipients are busy time-constrained SME managers it was considered sensible to ask for lesser efforts for completion in order to maximise the response rate. Another advantage of employing closed style questions was it allows for compatibility and clarification. Unlike open questions, pre-fixed answers do not need to be coded. This coding is very time-consuming and can be a source of measurement errors, which may affect the validity of the research (Bryman, 2001). Nevertheless sufficient spaces and extra columns were provided in the answer sheet to enable respondents to give comments on issues of their specific interest and agenda overlooked in the research.
Prior to its dispatch, a thorough review was implemented by White Young Green Environmental to check the appropriateness of questions as well as to identify any anomalies in question wording, question order, redundant questions and missing questions.
4.0 Feedback form analyses

Prior to the presentation of main questionnaire results, both quantitative and qualitative analysis outcomes of feedback forms are exhibited in this chapter with the scope of drawing tentative conclusions on satisfaction level and identifying key issues for further analyses.

4.1 Quantitative data

Collected feedback forms were from training workshops of different phases. As the issues dealt with during the session varied by workshops (notably Phase 2 concerned specifically with legal and other requirements), it was worth taking into account its composition. More than 90% of them were up to objectives, targets and programme development level (Phase 3). Very few experienced more advanced stage and none from beyond Phase 6 (Fig 4.1).

![Composition of collected feedback forms based on different phases](image)
Likert scales technique was employed to the answers in the first four questions in order to discover strength of feeling or attitude towards a given statement (Bell, 2005). In so doing, values had been assigned to each description in the following manner.

**Q1** Overall how would you rate today's event?

2: Excellent, 1: Good, 0: Moderate, -1: Poor

**Q2** How well did the Easy Access Environmental Management training meet your requirement?

2: Very well, 1: Well, 0: Partially, -1: Not at all

**Q3** Do you feel that this workshop will prove beneficial in your normal work?

1: Yes, 0: Not Applicable, -1: No

**Q4** Do you feel that this workshop will prove beneficial in relation to the project?

1: Yes, 0: Not Applicable, -1: No

Mean values as well as standard deviations and statistical significance ($p$) values were calculated for each phase and presented in Table 4.1. In order to maintain 95% or above confidence in significance level of the outcome, the $p$ value of each component needs to be no more than 0.05.

With all the mean values greater than 1, i.e. “Good” or “Well”, it can be said that high appraisals have been received for both Q1 & Q2 and satisfaction levels tended to be higher as participants progress through each phase (above 1.5 in mean values for phase 4 & 5). This may be due to increase in familiarity of the programme, which had led to good understandings of expected learning outcomes and confidence boost.

Positive answers dominated in Q3 & Q4 too. More respondents felt the question about
“the project” not applicable. Although some of the confidence levels were slightly low or unobtainable due primarily to low sample numbers, tentative conclusion regarding participants’ view could be that expectations and requirements of SMEs had been satisfactorily met.

Table 4.1 Statistical analysis results on Q1-Q4 of the feedback form

<table>
<thead>
<tr>
<th>Phase</th>
<th>N</th>
<th>Mean</th>
<th>SD</th>
<th>t value</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Q1</td>
<td>1</td>
<td>48</td>
<td>1.333</td>
<td>0.519</td>
<td>17.794</td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>55</td>
<td>1.291</td>
<td>0.567</td>
<td>16.892</td>
</tr>
<tr>
<td></td>
<td>3</td>
<td>60</td>
<td>1.233</td>
<td>0.563</td>
<td>16.954</td>
</tr>
<tr>
<td></td>
<td>4</td>
<td>11</td>
<td>1.727</td>
<td>0.467</td>
<td>12.264</td>
</tr>
<tr>
<td></td>
<td>5</td>
<td>5</td>
<td>1.800</td>
<td>0.447</td>
<td>9.000</td>
</tr>
<tr>
<td>Q2</td>
<td>1</td>
<td>48</td>
<td>1.438</td>
<td>0.542</td>
<td>18.371</td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>55</td>
<td>1.273</td>
<td>0.592</td>
<td>15.951</td>
</tr>
<tr>
<td></td>
<td>3</td>
<td>60</td>
<td>1.367</td>
<td>0.637</td>
<td>16.621</td>
</tr>
<tr>
<td></td>
<td>4</td>
<td>11</td>
<td>1.727</td>
<td>0.467</td>
<td>12.264</td>
</tr>
<tr>
<td></td>
<td>5</td>
<td>5</td>
<td>1.800</td>
<td>0.447</td>
<td>9.000</td>
</tr>
<tr>
<td>Q3</td>
<td>1</td>
<td>48</td>
<td>0.917</td>
<td>0.279</td>
<td>22.738</td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>55</td>
<td>0.891</td>
<td>0.369</td>
<td>17.914</td>
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<td>0.950</td>
<td>0.220</td>
<td>33.481</td>
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<td>4</td>
<td>11</td>
<td>1.000</td>
<td>0.000</td>
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<td></td>
<td>5</td>
<td>5</td>
<td>1.000</td>
<td>0.000</td>
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<tr>
<td>Q4</td>
<td>1</td>
<td>48</td>
<td>0.729</td>
<td>0.449</td>
<td>11.249</td>
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<td>0.440</td>
<td>12.575</td>
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<td></td>
<td>3</td>
<td>60</td>
<td>0.783</td>
<td>0.415</td>
<td>14.605</td>
</tr>
<tr>
<td></td>
<td>4</td>
<td>11</td>
<td>0.636</td>
<td>0.505</td>
<td>4.183</td>
</tr>
<tr>
<td></td>
<td>5</td>
<td>5</td>
<td>0.600</td>
<td>0.548</td>
<td>2.449</td>
</tr>
</tbody>
</table>
4.2 Qualitative data

In interpreting the data from the open-ended questions, the technique of three-stage analysis was employed – description, classification and connection (Goodwin, 2004). Documents on the questionnaire sheets were transcribed and grouped by the question number; key words were highlighted and the documents sorted based on them; some groups were then merged due to similarity of their key words.

<table>
<thead>
<tr>
<th>What elements of the Easy Access Environmental Management training did you find most useful?</th>
</tr>
</thead>
<tbody>
<tr>
<td>EMPs</td>
</tr>
<tr>
<td>EMS Mapping</td>
</tr>
<tr>
<td>Environmental Aspects</td>
</tr>
<tr>
<td>EPIs</td>
</tr>
<tr>
<td>Exercises</td>
</tr>
<tr>
<td>Good Details</td>
</tr>
<tr>
<td>Information Access</td>
</tr>
<tr>
<td>Interaction / Discussion</td>
</tr>
<tr>
<td>Legal Requirements / Register</td>
</tr>
<tr>
<td>Overall Presentation</td>
</tr>
<tr>
<td>Phased Approach / Ease of Use</td>
</tr>
<tr>
<td>Practicality</td>
</tr>
<tr>
<td>Templates</td>
</tr>
<tr>
<td>Useful Tips</td>
</tr>
</tbody>
</table>

Fig 4.2 Frequency in appearance of key areas that were perceived useful

A diverse range of comments had been given for the fifth question. As a result of qualitative data analysis 14 distinctive categories had been identified (Fig 4.2). A number of participants seemed to be enlightened by the novelty and usefulness of templates, environmental performance indicators (EPIs) and Easy Access’s (BS 8555’s) phased approach. Clarity and persuasiveness of the presentation received high
commendations whereas opportunities to exchange opinions and information with other participants were perceived valuable. It was not surprising 15 out of 17 comments on legal requirements came from the participants of Phase 2 workshop.

Only a handful of comments had been given to the sixth question regarding elements not meeting the expectations, which also mirrored high satisfaction levels of the workshop. Using the same qualitative technique comments were classified as follows with the number in brackets.

- Poor time management (3)
- Not applicable to their business (1)
- Complexities (1)
- Too generic (1)
- Lack of trainer’s understanding (1)

Care had to be taken in handling these outputs because comments on time management came from the participants having attended the same workshop. It was also the case in the comments on generic nature and trainer’s competence. Although those dissatisfactions were likely to be attributable to one specific event instead of the programme itself, such opinions were taken seriously and incorporated into the questionnaire for further investigation.

The last question of any possible uncovered areas prompted even fewer responses. Nonetheless all of them were subject to further analyses.

- Brief section about other supporting bodies (1)
- More integrated group approach (1)
• Worked examples (1)
• More detail (1)
• Government influence (1)
5.0 Research findings and discussion

This chapter presents facts obtained from the questionnaire survey and explores further implications of those findings.

5.1 Questionnaire turnout

From a total sample of 52 recipients there were 29 responses, out of which two were of formal declination due to the company’s policy and another two were deemed unusable because a large part of the questions were not answered. Total number of questionnaires involved in this research was therefore 25. There were clear “contact effects” in that 62% of those who were directly contacted over the phone had responded whereas only 30% of recipients had replied where the contact addresses of those personnel had been provided from the third person. Despite relatively small sample size eventual response rate of 50% can be considered acceptable (Bryman, 2001).

5.2 Questionnaire analysis

Who are you

In this introductory section the degree of segmentation was meant to be revealed. Amongst the EU criteria regarding SME definition, number of employees was the most commonly used (Hillary, 1999) thus this research also adopted such classification. As shown in Fig 5.1 distribution in size of organisations involved in this research was not in line with the latest statistical outputs on the construction sector (SBS, 2004). However, it did provide justification for the scripts in the Easy Access guidance workbook claiming that its materials are relevant to all types and size of company

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18 The ratio of 'number of usable questionnaires' against 'total sample – unsuitable members of the sample' (Bryman, 2001: 96)
(CIRIA, 2003; CIRIA, 2004). Although this research focused on SMEs the data from large firms were nevertheless beneficial and has been used as a means of comparison.

![Size distribution of companies responded](image)

There exists a myriad of construction supply chains and each constituent enterprise will provide specific products and services which differ from project to project. Though it was not easy to classify them according to their job types, attempts had been made using the model by Cox & Ireland (2002) who divided businesses into a group of those supply raw materials/components, those provide labour forces and those sell, rent or lease equipments. As they indicated there were a significant number of overlapping answers, i.e. most of the companies provide labour forces along with materials and/or equipments (Fig 5.2). It was acknowledged that the reality is not that simplistic, nevertheless this classification result offered useful sources for detailed investigation in the subsequent analysis.
Information on the respondents’ job title has been analysed in conjunction with the size of the organisation. There were 22 different title names identified and they were on the whole categorised into three groups (Fig 5.3).
The outcome indicated that managing director who generally deals with the company’s overall activities tend to have taken charge of the EMS implementation in smaller companies, whereas larger enterprises were inclined to assign the role to managers with responsibility in more specialised areas such as health & safety, quality or environment. This tendency could imply limited human resources in smaller firms in that they cannot afford to appoint dedicated personnel to their EMS development. This finding was in line with the following Hillary’s argument.

Lack of human resources and the multifunctional nature of staff becomes of ever-increasing importance as the size of the company decreases not only to the implementation but maintenance of EMSs. (Hillary, 1999: 18)

An open question regarding accreditations prompted a variety of answers. Those cited in multiple occasions were as follows with its frequency in brackets.

- ISO 9001: 2000 (16)
- Investors in People (IiP) (6)
- ISO 14001: 2004 (3)
- Heating and Ventilating Contractors Association (HVCA) (3)
- Electrical Contractors Association (ECA) (2)
- Confederation for the Registration of Gas Installers (CORGI) (2)

More than half of the enterprises that responded had already their quality management system (QMS) certified. This standard is known to be of a very good degree of similarity and compatibility with the EMS standard. Hence the impact of QMS standard
certification on ease/difficulty or willingness/hesitancy in uptake of EMS components was to be analysed. It turned out that three of those already certified to ISO 14001 were principal contractors who sought for effective supply chain management by organising seminars themselves for their key suppliers and sub-contractors.

There was a necessity for asking respondents’ attendance records since several copies were missing in those provided by CIRIA. As opposed to the outcome shown in Fig 4.1 some had already completed all six workshops. Nearly 70% of them had experienced up to phase 3 level, which is generally regarded as essential for every organisation in the construction sector (Fig 5.4).

**Fig 5.4** Respondents’ attendance records for each phase of the workshops

*NB: one respondent did not give answers on this question*
Satisfaction

Questions in this section were constructed with specific reference to the outputs in the open questions of the feedback form. The level of respondents’ satisfaction was by and large very high with more than 80% of respondents having given affirmative answers in all the criteria (Fig 5.5).

![Bar chart showing level of respondents' satisfaction about the workshop](chart.png)

Fig 5.5   Level of respondents’ satisfaction about the workshop

The fact that all the respondents perceived programme details as relevant was worthy of note taking into account the diverse nature of the construction sector. One participant commented:

“In the sessions I attended there was a mix of businesses and this added to the overall course. It introduced situation that I would not normally come across but had some relevance in the way we could deal with incidents”

(medium-sized enterprise of material supply)

Higher proportions of the “strongly agree” evaluation in both delivery clarity and
answer promptness were also encouraging as they would imply a decent level of trust on support providers.

In summary, participants seemed to be satisfied with both the way information was delivered and the contents of information provided. Hence it can be said that Easy Access programme appeared to overcome conventional problems of available external support with poor quality (see below quotation) and the outcome of this section consolidated legitimacy of the tentative conclusion drawn through the feedback form analysis.

SMEs appear to need support and guidance … but experience problems gaining consistent quality information and experienced consultants of good quality (Hillary, 1999: 20)

Any influences of size and job type on overall satisfaction levels were then investigated (Fig 5.6a & 5.6b). As it stands no particular differences were identified, which may demonstrate the programme’s perceived suitability to all businesses within the sector.
Fig 5.6a  Satisfaction level breakdown by the size of the organisation

Fig 5.6b  Satisfaction level breakdown by the job type of the organisation
**Benefits**

![Benefits Chart](chart.png)

Fig 5.7  Degree of fulfilment of participants’ expectation

Ramsden & Bennett (2005) suggested that actual impacts of external advice can be assessed from two aspects:

- **Objective “hard” criteria:** (reduction in business costs; increase in business turnover; increase in business profitability)
- **Subjective “soft” criteria:** (ability to cope with problems; ability to manage)

When participants were asked how the programme affected them there appeared striking differences between two criteria. Most of the “soft” aspects had met their expectations satisfactorily, with those closely related to the respondents’ personal development being particularly high, almost 90% were satisfied. Organisations’ internal aspects, e.g. awareness, also valued highly, whereas external affairs fulfilled half of the participants’ expectation. Of the lowest were in contrast the “hard” aspects, where the
answers of “no influence” and/or “too early to judge” shared relatively large proportion. This trend was in line with the view of Wyre et al. (2000) who saw external advice as part of a human learning process of adjustment, alignment, and anticipation that affects the values and strategic beliefs of a business, which only later may influence operational routines and hence affect costs, profits or turnover. Therefore it would be fair to say that the programme had so far induced intangible changes to SMEs but had not yet brought in tangible influences enough to yield economic benefits. The comments made by two participants demonstrate this point:

“Staff were more aware of environmental issues via the press and could now relate to the issues in the workplace, i.e. wildlife, pollution, waste minimisation etc.” (medium-sized enterprise of material, labour and equipment supply)

“It will take time to implement EMS so that it will start to make a significant difference. However I am starting to see changes around the group that are most pleasing” (large enterprise of material, labour and equipment supply)

A caveat needs to be mentioned regarding these analysis results was that the cause-effect relationships between information provision by Easy Access and actual behaviour were by no means direct and straightforward. Improvement in performance may be mixed with the effect of many other changes and decisions that the company makes over time. Another point to make was the time lapse between workshop attendance and questionnaire distribution. In fact the timing of workshops held ranges from October 2003 to April 2006. Impacts may be delayed to appear, therefore it would be easier for those participated in the workshop three years ago than three months ago to detect any symptoms or changes.
Templates

The Easy Access package actually provides 21 different templates and most of the comments in the feedback form did not mention specific templates number which were regarded useful. Thus the first point was to examine which templates attracted SMEs. In so doing, attention had to be paid to in which workshop session each template was first introduced since respondents having experienced, for instance, up to phase 3 workshop had yet never come across the Template 12 (see Appendix 3 for more details), hence unable to evaluate it, let alone use it. With this in mind outcomes using percentage were presented as follows (Fig 5.8).

![Figure 5.8](image-url)

**Fig 5.8** Comparison in ratio where each template was perceived useful and in use
On average, 70.8% of the templates were found useful and 36.0% of them actually being in use. It was anticipated from the result of the feedback form analysis that more favourable evaluations be given on phase 1-3 templates, but in contrast those having introduced in the latter stage prompted even higher “helpful” answers. One possible explanation for this trend is that the template is in essence a prototype thus often needs to be customised according to their existing organisational procedure (Kirkland & Thompson, 1999). Such tasks may have been onerous and require further external help for relatively inexperienced, not fully acclimatised to the system approach, personnel. One participant commented:

“Not always as intuitive as they may be and require the coaching skills of the course delivery organisation to set them into the proper (or a useful) context”

(medium-sized enterprise of material and labour supply)

Experience seemed to have been an influential factor in that a number of respondents cited own procedures already in place thus no immediate needs for templates to be used as demonstrated by the following comments:

“We have adapted our existing systems rather than introduce new”

(medium-sized enterprise of material, labour and equipment supply)

“Early stage of the programme has limited our need to explore more fully all of the templates provided through the course however it is likely that more of them will become useful for reference or be formally adopted at a later stage”

(medium-sized enterprise of material and labour supply)

The latter comment was particularly important. Although some templates may not
sound effective in the earlier stage, there is still a prospect of playing an active role at the time of retrospective system revision.

Meanwhile, more of them suggested similarity and compatibility of their QMS to the introduced templates and quite a few organisations claimed that they have been practicing integrated management system (IMS). Then further analysis has been implemented as to the influence of formal QMS possession on both attitude and behaviour of templates (Fig 5.9).

The results showed virtually no difference in attitude but there was certainly a difference in current usage. It may suggest that experience of QMS formal certification pushed up practitioners’ capability of adapting the prototype to suit their purposes.

To sum up, templates had prompted welcoming attitudes especially from those more familiar with the whole EMS approach. Approximately half of these positive attitudes have led to actual behaviour. This 36% uptake rate does not in itself tell whether

Fig 5.9  Comparison between QMS certified and non-certified on attitude and behaviour towards templates
templates were effective or not, however there is a prospect of more usage as practitioners go through later stages and become accustomed to more formal system approach.
**Indicators**

Finch (2005) insisted EPE can be used readily by construction companies site by site and tailored to meet the individual needs of the company. This being the case, the focus was on which type of indicators tend to be used, require help to be used and tend to be overlooked. There are in principle three types of EPIs and Yves Butruille (2006) advocated mixing all if possible as they complement each other. Further classified list of OPI and MPI was provided in the questionnaire sheet by referring to ISO 14031 (ISO, 1999). Omission of ECI in the list was explained by its low likelihood of inclusion by SMEs, nonetheless free column was provided allowing to adding any other types of indicators in use.

![Fig 5.10   Current and prospective use of EPIs](image)

Two thirds had already been periodically evaluating their implementation of policies and programmes (Fig 5.10). In addition to this element conformance, materials, wastes

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19 Environmental condition indicator (ECI), operational performance indicator (OPI) and Management performance indicator (MPI)
and emissions were deemed relatively high in priority. No definite trend was identified regarding MPI/OPI classification, rather a variety of indicators have been chosen by the companies that replied. No extra indicators were provided in the free column.

Rough estimate in number of indicators currently being used was 4.67. This figure was somewhat disappointing given Finch (2005)’s claim of EPE’s instant applicability. Major contributing factor indicated in the answer sheet was time requirement for setting up monitoring and evaluating procedure. One participant explained:

“Too early yet to say we do this on a regular basis” (medium-sized enterprise of material, labour and equipment supply)

It was therefore understandable nearly half of the respondents thought it was too early to judge the level of EPI’s contribution to their environmental performance improvement and a quarter were rather uncertain (Fig 5.11).

Fig 5.11 Distribution of answers on the question concerning contribution of indicators to environmental performance improvement

\[
\text{Obtained by the following formula } \frac{\sum (\text{frequency} \times \text{mid-point})}{\text{number of respondents}} (\text{Bell, 2005})
\]
Variety in type of EPIs used was greater as the size of organisations increase (Fig 5.12). Larger enterprises found it relatively easy to incorporate various indicators into their operational procedure and tried to assess their performance improvement from different angles. Medium-sized group were currently practicing with limited ranges of EPIs but intended to introduce much more in the coming future. Smaller firms, also with limited variation, in contrast expressed modest intension about further EPI incorporation. This was presumed due primarily to the fact that small enterprises were rather sceptical of the effectiveness of EPIs for their environmental performance improvement (Fig 5.13). Systematic and periodic monitoring and evaluation of certain indicators were still too much a burden for busy multi-tasking managers.

Another attempt was made to identify any correlation of respondents’ uptake of EPIs with formal QMS certification. It was assumed ISO 9001 holders will be more likely to adopt a variety of EPIs because they were already accustomed to indicator-based approach and were aware of its usefulness through their formal QMS development.
Do indicators contribute to improving your company’s environmental performance?

Fig 5.13 Breakdown of answers to the question concerning contribution of indicators to environmental performance improvement by sizes

Fig 5.14 Comparison between QMS certified and non-certified on current / prospective EPI usage

The actual output did illustrate such tendency; ISO 9001 holders had been and will be using more variety of indicators (Fig 5.14). However, the rationale of these decisions would be more of their experience and acquired ability to incorporate indicator monitoring / evaluation activities into their business process rather than of perceived
effectiveness of EPIs. Fig 5.15 did not show strong influences of ISO 9001 certification over respondents’ affirmative answers.

![Graph showing Do indicators contribute to improving your company's environmental performance?](image)

Fig 5.15 Breakdown of answers to the question concerning contribution of indicators to environmental performance improvement with QMS certified and not

As a whole it could be summarised that application of EPE technique and use of EPIs was, although intensity being limited, diffused in the sector. Benefits out of EPI usage had been partly recognised among participants but solid conclusion cannot be made at this stage as it will require more time for EPE procedure to settle in the organisations. Size influences were present and smaller firms faced particular difficulty in establishing EPIs in a time / cost effective manner. Experience of formal QMS development also had influences on EPI uptake, confirming good compatibility and ease of integrity between two standards.
**Information provision**

Hillary (1999) suggested the absence of a central source of information on environmental legislation is one of the barriers to EMS implementation. This point was mirrored in the feedback forms where the aspect of legal requirements was ranked second highest as a useful learning outcome (see Fig 4.2). Lack or insufficient flow of information was also a cause of concern in promoting waste minimisation and materials recycling within the sector, and Powell & Craighill (2002) called for the introduction of a variety of information providers to change workers attitudes and increase market efficiency. In addition to this dearth of information sources, Garstenfeld & Roberts (2000) stressed the need for relevant information, raising the following problems:

- Smaller firms do not, for a number of different reasons, have access to environmental management information; or
- Smaller firms have access to an overwhelming flood of data but are unable to identify the relevant information.

Not only does Easy Access provide information specific to the businesses in the sector, but also it introduces and encourages more use of external support bodies for further information. Hence it was anticipated that attendees began to seek advice or information from more diverse sources. The results, however, went an opposite way exhibiting the fact that both the variety and the number of contacts had been decreased after the introduction of Easy Access (Fig 5.16). Attendees seem to have already recognised various options to seek advice before starting the Easy Access programme. Subsequent reduction can be explained being due to their selection process, in other words practitioners had shifted to and put more weight on particular bodies in the light of the
quality of their services and information. The outcome for this analysis therefore did not support the tendency of information shortage amongst the respondents.

The hypothesis of selection was consistent with the output of usefulness valuation.

Likes of local authority and Chamber of Commerce, having lost their votes considerably, received some negative opinions (Fig 5.17). In contrast CIRIA and NetRegs were as a whole perceived helpful and now attract more attention from practitioners. It seems as though organisations offering services specific to the industry e.g. CIRIA, BRE and to
smalls firms e.g. NetRegs were much preferred than those providing very general support on environmental issues e.g. Chamber of Commerce, Business Link.

In summary the programme had enabled participants to reach relevant information by allowing to selecting the fittest providers rather than widening the range of choices.

Information will be a powerful tool for change only when it is communicated to a target group, turned into knowledge and put into practical use (Gerstenfeld & Roberts, 2000: 114).
Progress & Prospect

Thus far influences of the Easy Access package on some target criteria have been assessed. The question to be asked then was to what degree participants had made progress with the programme. Easy Access elaborates on the PDCA processes of EMS by breaking them down into phases and stages. Thus the answers were sought for as to where were you, where are you, where will you be and where do you want to be (Fig 5.18).

![Diagram showing respondents' progress based on phases & stages stipulated in BS 8555]
The red dotted lines indicate the number of respondents attended each workshop. Nearly half of the respondents had never made any attempts for environmental management (presented as 0.0 in the chart) before joining the programme. Now about 70% of the workshop attendees have managed to complete Phase 1 and 2. After some struggle in Phase 3, even higher completion levels can be found at Phase 4 and thereafter. Overall it can be said that attendees have hitherto made steady progress towards each individual goal.

Interestingly approximately half of replied organisations intended to proceed to second party auditing (6.1) and ISO 14001 certification (6.2) but few showed their ambitions towards EMAS registration (6.3). This was possibly because respondents so far identified less benefit out of EMAS over other second/third party audits primarily on the following grounds (Hillary, 1999).

- ISO 14001 did not have an environmental statement requirement
- ISO standards are well known and accepted concepts

There was some feedback as to stages that practitioners found difficult to implement.

- Phase 1, Stage 1: Gaining and maintaining management commitment (2)
- Phase 2, Stage 1: Identifying relevant legal requirements (1)
- Phase 2, Stage 2: Identifying other requirements (1)
- Phase 2, Stage 3: Checking compliance (1)
- Phase 2, Stage 4: Ensuring ongoing compliance (1)
- Phase 2, Stage 5: Developing compliance indicators (2)
- Phase 3, Stage 4: Establishing indicators for environmental performance evaluation (1)
Despite their improvement in skills of accessing relevant information from external sources, tasks around legal requirements were still problematic. Many respondents seem to have been facing difficulties particularly in dealing with indicators and this tendency can be interpreted from the chart where actual progress levels in Stage 2.5 and 3.4 have dropped considerably from previous stages. These facts proved legitimacy of the previous discussion about slow EPI development. Securing ongoing supports from top management was also an issue. This commitment should enable time, financial and other resources to be allocated to the programme implementation (Netherwood, 1996). This hardship will be partly stemmed from struggle in indicators development because without explicit evaluation outputs it is difficult to explain and convince senior managers about seriousness of the company’s current environmental performances and imperativeness for corrective actions (see discussion in page 13). The following comment from a respondent well described such problem.

“It's always difficult to gain both the support manly financially of your Directors when expenditure is involved, but even harder to gain commitment when they don't understand the environmental issues.” (medium-sized enterprise of material, labour and equipment supply)
**Closing**

After having delved into fairly detailed information, final section sought for the participants overall verdict on the programme. The timing was thought to be appropriate because recipients will be reminded of their performance on key criteria covered so far when making decision. Although the questions were in themselves of an intuitive nature, it was expected that their decisions be made on rational grounds with a high level of confidence.

![Bar chart](image)

**Fig 5.19** Answer distribution to the question concerning helpfulness of Easy Access to an effective EMS development

Two out of three respondents said Easy Access was helping their EMS development (Fig 5.19). This proportion was even higher than that of those already enjoyed any tangible benefits from the programme (see Fig 5.7). Practitioners were not necessarily overwhelmed with the EMS requirements and maintained momentum towards effective EMS implementation owing to the programme even when no concrete, economic in particular, benefits have come up yet. The results therefore implied participants’ great interest in a “soft” aspect of the expected benefits, which can trigger tangible benefits
later on (Wyre et al. 2000), and a high degree of satisfaction levels with observable changes and symptoms in that aspect.

When it comes to the size influence all the large companies made affirmative responses, of which three were supply chain leaders. Medium-sized enterprises were, if anything, inclined to be positive but the tendency seems to reduce as the size decreases. It is likely larger firms have gained more benefits out of Easy Access and the programme had greater effects on supply chain management.

Fig 5.20 Answer distribution to the question concerning worthiness of Easy Access

Hillary (1995) insisted that supporting organisations need to develop strategies which deal with the internal weakness in SMEs and deliver affordable company specific advice. The fact that vast majority believed the programme was worthy of investment (Fig 5.20) had fulfilled such premises to be a successful support provider. One participant cited:

“Much cheaper than external consultants and provides a ‘bespoke’ solution that suits our business rather than being an ‘off the shelf’ solution that has to
be manufactured and amended to properly integrate with our existing processes” (medium-sized enterprise of material and labour supply)

Difference in size was not distinct in terms of perception. However, it can be said smaller firms were slightly uncertain over the worthiness probably because of its limited perceived effectiveness and relative value of the expense\(^2\) – smaller companies usually have lesser available funds. One Managing Director from a small enterprise gave a comment in conjunction with the applicability of the programme.

“\textit{I believe in its current format it is only suitable for 20+ employees. In terms of pure effectiveness on the environment a condensed scheme would help tackle the problem of effectively involving the many other smaller / one man band businesses.”} (small enterprise of material and labour supply)

This hypothesis was not effectively tested in this research due to lack of samples from micro enterprises. But it is probable there is a threshold in size for the programme to be practically cost effective.

When asked status quo of the cost/benefit balance, very different answers from the previous ones were given (Fig 5.21). Although no respondents felt Easy Access was not worth the expense, a quarter of them have been experiencing financial setback from the programme. It seems still difficult to achieve cost effective EMS implementation throughout the process even though Easy Access was designed to allow those facing financial constraints to proceed at their own pace. Bearing in mind the positive opinions in the previous two questions, respondents embraced a high level of confidence and prospect on their future EMS development despite some transient deficits.

\(^2\)Materials: £40 per CD package, Training: £250 per delegate per Phase
No distinctive trend was identified from the difference in size, indicating these features being common irrespective of the size. It was regrettable no respondents had provided with detailed figures as to profits and/or expenditure associated with the programme.

![Fig 5.21 Answer distribution to the question concerning cost/benefit balance](image)

**Fig 5.21** Answer distribution to the question concerning cost/benefit balance

Would you still seek further EMS development were it not for client requirements?

![Fig 5.22 Answer distribution to the question concerning their intention in the absence of client requirements](image)

**Fig 5.22** Answer distribution to the question concerning their intention in the absence of client requirements
More than half (56%) of respondents expressed commitment to EMS development even in the absence of client influences (Fig 5.22). It was hypothesised from the discussion so far that their current driving force has been generated from something moral e.g. social responsibility rather than substantial e.g. quick cost savings and this was backed up by the results of the study by Tilley (1999) and Pimenova & van der Vorst (2004). But some rejections indicated that existence of too powerful influences from clients could not be ruled out. A partnership approach with the aid of mentor companies should be what is envisaged through Easy Access programme, obviously not a heavy-handed dictatorial approach (Gascoigne, 2002).

Whilst most of the medium-sized enterprises showed no-difference attitudes, small businesses were rather uncertain. This would possibly be again related to the level of confidence they put in the programme and concerns as to whether their investment can ultimately pay off.

![Bar chart showing respondents' concerns in developing EMS](image)

**Fig 5.23** Respondents’ concerns in developing EMS
Although it was an open-ended question, the question about participants concerns in developing an EMS prompted seven answers about time and four of cost (Fig 5.23). Easy Access employs a step-by-step approach hence participants in theory can halt until resources become available again. Multiple comments about time and cost could suggest that market conditions urged much higher pace of uptake i.e. companies in the sector were anxious for obtaining competitive advantages. These findings indicate that what CIRIA aimed to achieve by designing Easy Access has come to fruition.

It was not surprising the factors of time and cost were raised only from SMEs. These concerns are inherent and smaller firms will have to get on with them whenever they plan to implement new processes. What is promising is that many of the SMEs in the sector put high confidence in the programme itself as well as in their future progress towards effective EMS development.
6.0 Conclusions

6.1 Conclusions on research findings

The research first attempted to assess the deviation between the information provided by the programme and the one sought for by SMEs. The results drawn by feedback forms and questionnaire analyses showed very high satisfaction level. This means the service and information provided through sector specific support programme have successfully met the requirements of SMEs. The fact that neither difference in size nor in sub-sector influenced the trend implied great effectiveness of the industry-led support programme in maintaining relevance to every stakeholder within the sector. It can therefore be said the programme had higher potential to push the ostrich and laggards up to thinkers level than conventional support tools.

Actual behaviours by attendees were by and large promising in that they have already enjoyed intangible “soft” benefits. Tangible “hard” benefits, e.g. cost savings, have not yet been experienced for many of the organisations but they have been making steady progress in terms of phases and stages by effectively utilising templates and constantly liaising with fittest external information providers. There were actually differences in the level of practice when it comes to application of templates and EPIs depending on sizes and previous experience of formal management system standards. Smaller firms, despite the programme’s step-by-step approach, still had concerns on time and financial constraints but managed to retain momentum towards performance improvement.

Majority of practitioners were assiduously undertaking EMS development in their own way hence they were no longer thinkers. The message of the sector specific programme had reached SMEs and has made things, though yet small, happen within the sector.
6.2 Suggestions to CIRIA

This section should fulfil the last objective of this research. Here all three suggestions cited in the questionnaire were introduced.

*Target departments, this area within any business can be improved and where necessary changed to result in better return, not only financially but from an environmental aspect i.e. paper use in the admin department, stems from drawing issue department and in turn contract department. All areas that can be improved upon.* (large enterprise of material, labour and equipment supply)

This company is one of the principal contractors amongst respondents and working on effective supply chain management. It was felt necessary to take into consideration the organisational structure common to the sector and provide department specific tips for achieving quick cost savings.

*Expanding the programme to take into account the requirements of the associated building trades (medium-sized enterprise of material, labour and equipment supply)*

As was cited in Progress & Prospect section, the Phase 2 of identifying legal and other requirements remained an onerous task for SMEs. Hence provision of support regarding other requirements with wider scope will facilitate the process.

*Develop a section for designers (small enterprise of labour supply)*

Even though stipulated in the guidance book that Easy Access materials are relevant to designers, this was questioned by a practitioner. Additional comments or guidance may be beneficial to maintain relevance for this sub-sector.
Many practitioners, especially from smaller firms, faced difficulty in establishing, monitoring and evaluating EPIs. Extensive use of EPE technique is one of the greatest advantages peculiar to BS 8555 so as to keep environmental issues to the forefront of the business agenda before an EMS yields results. Hence unsuccessful installation of EPIs can be fatal. Indeed the programme offers detailed information with some hands-on working examples; it would be worth considering, given its complexity, schemes to encourage SMEs to take up on-site support or case-by-case consulting service.

Another cause of concern is relative lack of awareness about their environmental impacts on wildlife (see Fig 5.7). Habitat conservation is nowadays addressed as an absolute key for sustainable construction (for example CIB, 1999; DTI, 2005) and no businesses can essentially rule out any possibilities to affect wildlife within building and construction sector. It would be desirable to put more emphasis on this crucial issue within the programme.

### 6.3 Limitations and recommendations for further study

The obvious room for improvement in this research was its sample size. Although response rate was deemed acceptable, representativeness of the data was not absolutely certain because many potential recipients had not been reached due to the DPA 1998 implication.

Causality is another issue. Though satisfaction level was assessed with great confidence, actual performances are likely to be an outcome of complex interactions associated with each company hence possible presence of confounding factors cannot be denied. As this research was based solely on outputs from respondents it was virtually impossible to control and alleviate this impact.
It was regrettable the author never had an opportunity to take part in the training workshops, which might have had a great influence on more fruitful questionnaire composition. It turned out some participants had already completed all the phases of the Easy Access programme and others working on developing effective supply chain management as a principal contractor. With such variations in status, it would not have been a good idea to ask questions to all recipients in a uniformed manner.

Although the IEMA (2002) research showed organisations, irrespective of their size, spend an average of 18 months for the EMS implementation, one should expect more time for organisations employed phased approaches to progress. Some of the questions were felt too soon to be asked and actual level of performance improvement on that agenda was left uncertain. Hence it would be worthwhile keeping track of replied companies in order to effectively assess the degree of progress.

The research identified SMEs’ still ongoing concerns about time and cost constraints for their EMS development despite the fact that BS8555 was designed to let them implement EMS at their disposal. It was hypothesised their rate of progress could be influenced by market conditions and extrapolated that respondents were determined to gaining a competitive edge. This assumption in this research remained to be tested with more robust evidences. When it is justified the sector specific approach should be proved truly optimal for supporting further EMS uptake by SMEs.
7.0 References

http://www.theacorntrust.org/in_pa_what.shtml#
Last accessed 09.06.2006

collaboration and management in the UK construction industry. European


Birchall, R. (2005) Is BS 8555 an effective route to achieving a recognised


phased implementation of an environmental management system including the
use of environmental performance evaluation


process re-engineering. International Journal of Logistics Management. 9 (1)
15-23.

Burr, P. (2006a) Personal communication with a senior consultant of White Young
Green Environmental regarding potential use of BS 8555 in other business
sectors. 13th February.

Burr, P. (2006b) Personal communication with a senior consultant of White Young
Green Environmental regarding potential use of BS 8555 in other business
sectors. 28th February

http://europa.eu.int/smartapi/cgi/sga_doc?smartapi!celexapi!prod!CELEXnum
doc&lg=EN&numdoc=31996H0280&model=guichet
Last accessed 01.03.2006

Conseil International du Bâtiment (1999) Agenda 21 on sustainable construction. CIB

Construction Industry Research and Information Association (2003) Easy Access
Environmental Management – Implementation of BS 8555 in the construction

Environmental Management – Implementation of BS 8555 in the construction
sector, Phases 4-7. London.

approach. Engineering, Construction and Architectural Management. 9 (5/6)
409-418.

Department of Environment, Food and Rural Affairs (2005) Government position
statement on Environmental Management Systems
Last accessed 11.02.2006

Last accessed 11.02.2006


http://www.environment-agency.gov.uk/commondata/105385/ea_sustainable_9
08180.pdf
Last accessed 24.06.2006

Environmental Data Services (2001) Signs of life in construction sector supply chain
initiative. ENDS Report 322 29.


http://www.inem.org/htdocs/iso/hillary.html#Anchor-49575

Last accessed 20.12.2005


Last accessed 24.06.2006


Institute of Environmental Management & Assessment (2006) Acorn Register hits the landmark ‘half of the century’. IEMA downloaded issue 11: August

Last accessed 14.06.2006


Last accessed 11.02.2006


http://www.sbaer.uca.edu/research/icsb/2000/pdf/086.PDF
Last Accessed 25.01.2006


http://www.sbs.gov.uk/sbsgov/action/layer?r.l2=7000000243&r.l1=7000000229&r.s=tl&topicId=700011759
Last accessed 25.02.2006


APPENDICES

1. Covering letter accompanying questionnaire

2. Questionnaire

3. Phase / Template correspondence chart
   for Easy Access package
Appendix 1

Covering letter

accompanying questionnaire
Dear Sir/Madam,

Re: Easy Access Workshops

Following after this page is a questionnaire about the Easy Access workshops that you kindly agreed to complete when I spoke with you on the phone.

I am currently a postgraduate at the University of East Anglia, Norwich. As part of my MSc degree in Environmental Impact Assessment, Auditing and Management Systems I am required to complete a dissertation. The subject I have chosen as a research topic involves the influence and the effectiveness of sector specific support programmes for EMS implementation in the construction and building industry, using Easy Access Environmental Management as a case study. This research has been undertaken in collaboration with the Construction Industry Research and Information Association (CIRIA).

Your company participated in the Easy Access Environmental Management workshop(s) and as such I would very much appreciate you sparing time to complete the attached questionnaire about your impression of the workshop(s) and the current situation of your company’s environmental management. The questionnaire is composed of eight pages and it would take approximately 10-20 minutes to complete.

All information given will be treated in the strictest confidence and no comments will be attributable to any one person or organisation.

Please send the completed questionnaire back by email at your earliest convenience.

Thank you in advance for your valuable time.

Yours sincerely

Koji Tagami (Mr)
Email: K.Tagami@uea.ac.uk
Appendix 2

Questionnaire
WHO ARE YOU

1. What is your position in the company? ( )

2. What role does your company play in the construction industry? (tick and give details)
   - Material supply ( )
   - Labour supply ( )
   - Equipment supply ( )

3. How many employees do you have?
   - 1-9
   - 10-49
   - 50-249
   - 250+

4. What accreditations, if any, does your company have? e.g. ISO 9001 etc.

SATISFACTION

5. Which workshop have you participated in?
   - Phase 1 Securing commitment and establishing the baseline
   - Phase 2 Identifying and ensuring compliance with legal and other requirements
   - Phase 3 Developing objectives, targets and programmes
   - Phase 4 Implementation and operation of the environmental management system
   - Phase 5 Checking, audit and review
   - Phase 6 Environmental management system acknowledgement

6. To what degree do you agree with the following descriptions about the workshop?

<table>
<thead>
<tr>
<th>Strongly agree</th>
<th>Agree</th>
<th>Disagree</th>
<th>Strongly disagree</th>
<th>Don't know</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

   - Delivery / explanation from the advisors was clear
   - Pace / speed of the presentation was appropriate
   - Timeframe of the workshop was appropriate
   - Programme details were relevant
   - Exercise sessions were beneficial
   - Information on ‘good practice’ was helpful
   - Answers to questions were prompt and convincing
   - The course was appropriately in depth
   - Volume of materials given were proper and manageable
   - Time allocation for both lecture and discussion was adequate

7. Any comments on your answers
**BENEFITS**

8. At this point in time, to what extent have your expectations out of the Easy Access package been met?

<table>
<thead>
<tr>
<th>Above expectations</th>
<th>As expected</th>
<th>Below expectations</th>
<th>No influence</th>
<th>Too early to judge</th>
<th>Not applicable</th>
</tr>
</thead>
<tbody>
<tr>
<td>□ □ □ □ □ □</td>
<td>More confidence in your managerial skills</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>□ □ □ □ □ □</td>
<td>More ideas as to how to cope with environmental problems</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>□ □ □ □ □ □</td>
<td>Better understanding of requirements for environmental management</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>□ □ □ □ □ □</td>
<td>Better understanding of regulations relevant to your business</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>□ □ □ □ □ □</td>
<td>Increased environmental awareness in staff</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>□ □ □ □ □ □</td>
<td>Increased environmental awareness in senior management</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>□ □ □ □ □ □</td>
<td>Improved relationships with customers / principal contractors</td>
<td></td>
<td></td>
<td></td>
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<td>Better public / market images</td>
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<td>Cost savings through resource / energy efficiency and waste minimisation</td>
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<td>Avoiding penalties &amp; fines due to pollution incidents / breach of consent</td>
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<td>Reduction in complaints and nuisance issues</td>
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<td>Better insurance premium</td>
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</table>

*Please add & evaluate more issues if you have*

9. Any comments on your answers
10. Which of the following templates did you find useful?

11. Which are actually in use in your company?

<table>
<thead>
<tr>
<th>Useful</th>
<th>In use</th>
<th>Description</th>
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</thead>
<tbody>
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<td>Template 1  EMS structure and responsibilities</td>
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<td>Template 2  Environmental aspects and impacts review matrix</td>
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<td></td>
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<td>Template 3  Checklist of existing management practices and procedures, and identification of the main relevant environmental legal requirements</td>
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<td>Template 4  Indicator profile record form</td>
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<td>Template 5  Progress planning spreadsheet</td>
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<td>Template 6  Training needs analysis and training record form</td>
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<td>Template 8  Register of relevant legal and other requirements</td>
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<td>Template 9  Environmental incident/non-conformance reporting form</td>
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<tr>
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<td>Template 11 Environmental management programme</td>
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<td>Template 12 Environmental training procedure (written and flow chart options)</td>
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<td>Template 15 Document control matrix</td>
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<td>Template 16 Spillage response procedure</td>
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<td>Template 17 EMS audit, corrective and preventive action, and management review procedure</td>
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<td>Template 18 EMS audit programme form</td>
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<tr>
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<td>Template 19 EMS audit checklist and report form</td>
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<td>Template 20 Management review meeting agenda</td>
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<td></td>
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<td>Template 21 Management review meeting minutes and actions arising</td>
</tr>
</tbody>
</table>

12. Any comments on your answers

13. Any difficulties in making use of these templates or suggestions for further improvement?
**INDICATORS**

14. Which areas of environmental performance does your company monitor / evaluate at the moment?

15. Which areas of environmental performance does your company plan to evaluate in the near future?

<table>
<thead>
<tr>
<th>Current</th>
<th>Future</th>
<th>Type</th>
<th>Example</th>
</tr>
</thead>
<tbody>
<tr>
<td>☐</td>
<td>☐</td>
<td>Implementation of policies and programmes</td>
<td>No. of achieved objectives and targets; No. of employees trained</td>
</tr>
<tr>
<td>☐</td>
<td>☐</td>
<td>Compliance</td>
<td>No. of identified corrective actions; Costs attributable to fines and penalties</td>
</tr>
<tr>
<td>☐</td>
<td>☐</td>
<td>Financial performance of environmental management</td>
<td>Return on investment for environmental improvement projects</td>
</tr>
<tr>
<td>☐</td>
<td>☐</td>
<td>Community relations</td>
<td>No. of inquiries or comments about environmentally related matters</td>
</tr>
<tr>
<td>☐</td>
<td>☐</td>
<td>Resources / Material inputs</td>
<td>Quantity of processed, recycled or reused materials (including water) used; Quantity of hazardous materials used</td>
</tr>
<tr>
<td>☐</td>
<td>☐</td>
<td>Energy inputs</td>
<td>Quantity of energy used by type</td>
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<td>☐</td>
<td>☐</td>
<td>Physical facilities and equipment</td>
<td>No. of hours a specific piece of equipment is in operation</td>
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<td>☐</td>
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<td>Supply and delivery</td>
<td>No. of freight delivered by mode of transportation</td>
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<td>☐</td>
<td>☐</td>
<td>Products</td>
<td>No. of units of by-products generated</td>
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<td>☐</td>
<td>☐</td>
<td>Waste (solid, hazardous or effluents)</td>
<td>Total waste for disposal; Quantity of waste stored on site</td>
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<td>☐</td>
<td>☐</td>
<td>Other emissions</td>
<td>Duration of noise / vibration / light / odour generated</td>
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</table>

16. Any other indicators categorised in neither of these types

17. In total, how many indicators do you monitor / evaluate at the moment?

☐ 0-5   ☐ 6-10   ☐ 11-20   ☐ 21+

18. Do these indicators contribute to improving your company's environmental performance?

☐ Yes   ☐ Maybe   ☐ No   ☐ Too early to judge

19. Any comments on your decision
### INFORMATION PROVISION

20. From where did you seek advice or find information on environmental issues prior to using Easy Access?

21. From where do you seek advice or information now?

22. How useful are these sources?

<table>
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<tr>
<th>Before</th>
<th>Now</th>
<th>Very useful</th>
<th>Useful</th>
<th>Slightly useful</th>
<th>Useless</th>
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</tbody>
</table>

Please add & evaluate more sources if you have

23. Any comments on your answers
PROGRESS & PROSPECT

24. At which stage do you think your company was before the workshop?
25. At which stage do you think your company is now?
26. At which stage do you think your company can be by 2010?
27. At which stage do you think it appropriate to set the ultimate goal for your company?

<table>
<thead>
<tr>
<th>Before</th>
<th>Now</th>
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<th>Goal</th>
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</table>

No attempts for environmental management

Ph. 1
- Stage 1: Gaining and maintaining management commitment
- Stage 2: Baseline assessment
- Stage 3: Developing a draft environmental policy
- Stage 4: Developing environmental indicators
- Stage 5: Developing an initial draft EMS implementation plan
- Stage 6: Training, awareness and the initiation of culture change
- Stage 7: Initiation of continual improvement

Ph. 2
- Stage 1: Identifying relevant legal requirements
- Stage 2: Identifying other requirements
- Stage 3: Checking compliance
- Stage 4: Ensuring ongoing compliance
- Stage 5: Developing compliance indicators

Ph. 3
- Stage 1: Evaluation of environmental aspects and associated impacts
- Stage 2: Finalising the environmental policy
- Stage 3: Developing objectives and targets
- Stage 4: Establishing indicators for environmental performance evaluation
- Stage 5: Developing the environmental management programme
- Stage 6: Developing operational control procedures
- Stage 7: Launching the environmental policy, objectives, targets and indicators

Ph. 4
- Implementation and operation of the environmental management system

Ph. 5
- Checking, audit and review

Ph. 6
- Second party auditing & supply chain acknowledgement
- Preparing for external management system assessment (BS EN ISO 14001)
- Preparing for EMAS registration
28. Which stages did you find difficult to implement and why?

29. Any comments on your decision

**CLOSING**

30. Do you think Easy Access Environmental Management is helping your company develop an effective EMS?
   - Yes
   - Maybe
   - No
   - Too early to judge
   Any comments on your decision

31. Do you think Easy Access Environmental Management is worth the expense?
   - Yes
   - Maybe
   - No
   - Too early to judge
   Any comments on your decision

32. Do the benefits of improving environmental performance outweigh the associated costs so far?
   - Yes
   - Maybe
   - No
   - Don’t know
   Any comments on your decision or detailed figures if you have

33. Would you still seek further EMS development were it not for client requirements?
   - Yes
   - Maybe
   - No
   - Don’t know
   Any comments on your decision

34. What is your biggest concern in developing your company’s EMS?
35. Any requests / suggestions about the programme?

Thank you very much for your assistance

*Please make sure to SAVE your work and send it back to K.Tagami@uea.ac.uk*
Appendix 3

Phase / template correspondence chart

for Easy Access package
<table>
<thead>
<tr>
<th>Template</th>
<th>Description</th>
<th>Phase 1</th>
<th>Phase 2</th>
<th>Phase 3</th>
<th>Phase 4</th>
<th>Phase 5</th>
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