

The Barbour Report 1998

The Building Maintenance and Refurbishment Market
specification and product choice

Barbour Index plc

Barbour Index is a leading supplier of specialist information services to construction industry professionals, to facilities managers and to those responsible for health and safety at work. The company publishes technical and product information in printed form, electronically and on microfiche.

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Formed in 1986, it is wholly independent and owned by the Directors. Its services are supplied across the full breadth of the building industry, from design professionals to product manufacturers, main contractors, sub-contractors and developers and end users.

The company's nationwide fieldforce of interviewers are highly experienced in the challenges of identifying and questioning decision-makers within business environments. Coupled with the range of skills, research expertise and market knowledge, the company specialises in providing tailored solutions to meet clients' specific information needs.

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Nigel Chaldecott OBE, Director-General, National Council of Building Material Producers

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FOREWORD

Nigel Chaldecott OBE, Director-General, National Council of Building Material Producers

The market chosen to be researched by Barbour Index this year - the Building Maintenance and Refurbishment Market - is important for a number of reasons.

It is a large market as the findings confirm and is diverse with practices varying by type and ownership of buildings. It is of particular value as not enough is known about this market and the way that it operates.

I am sure this report will be of benefit to building material producers in the planning of their marketing strategy, providing valuable help in focusing attention on those identified as key players in the selection, specification and, above all, purchasing or ordering of building components and materials.

The report also highlights the type of service property managers wish to have available from our industry.

I have been pleased to contribute an introductory comment to previous Barbour Reports over the past six years. This will be my last as I shall be retiring later this year, so I would like to congratulate Barbour for the valuable contribution their portfolio of reports has made to our understanding of the specification process within the construction industry.

1. INTRODUCTION

Andrew Martin, Director and General Manager, Manufacturer Services, Barbour Index plc

The construction industry is one of the most volatile and challenging environments in which to manage a business. We are all too aware of the cyclical behaviour of the market; we have experienced the good times of the late eighties, and the bad times of the early nineties.

The challenge for building product manufacturers is to manage the growth of their business through the ups and downs. Key to continued success is to spread the risk, bring in new business from new or niche markets, thereby reducing dependency on a single market and hence desensitising themselves to market dynamics.

Every year Barbour Index plc undertakes extensive research on behalf of product manufacturers addressing a key common issue. This year our objective is to bring a degree of clarity to a sector which is well known in its entirety but mysterious in its mechanics. The maintenance and refurbishment market has very strong overlaps with new build thereby providing an excellent platform for material producers to grow their business whilst reducing their dependency on new build.

We know how products are specified and how to address the challenges of specification changes throughout a construction project. What has not been clear is what drives product choice throughout a building life cycle. How does the material producer ensure that he builds a relationship with the building occupier allowing him to service and maintain his products on an ongoing basis? How does he maximise his sales from the initial specification?

If we look at other industries, such as the automotive, white goods, and the PC market, the life of the product has become extremely important, providing manufacturers with sustainable competitive advantage. There are signs that the construction industry is also following this trend with product life cycle becoming increasingly important.

The objective of the '98 Barbour Report is to address these issues for our own industry, the research therefore has been focused on 'The building maintenance and refurbishment market – specification and product choice'.

The specific objectives of the research include:

- Clarification of the market potential, how big is it compared to new build?
- How do organisations approach building management, are decisions made in-house, on a planned or ad-hoc basis?
- What are the budget sizes, by market segment, and who controls them?
- What are the buying mechanics of the decision-makers, do they replace like-for-like, do they have standard policies, are the processes similar for refurbishment and maintenance?
- What are the key criteria for product selection, what areas must manufacturers address to ensure they maximise their sales from this market?
- What are the future trends which we all need to manage?

The '98 Barbour Report represents a key piece of market research which allows building product manufacturers to develop a road map of how to penetrate and realise their true potential in this profitable area. It provides essential feedback from the marketplace, combining it with comprehensive, clear and objective guidance.

2. THE '98 REPORT HIGHLIGHTS

- The maintenance and refurbishment market is complex, and is significantly greater than has previously been thought. It could be as much as 50% larger than the published figures.
- In the sectors covered in this report, maintenance and refurbishment expenditure could be up to three times that for new build.
- This report has examined the process by which leading organisations with major property portfolios manage their maintenance and refurbishment. This identifiable group of decision-makers are more likely to be at the leading edge of practice within the industry.
- Half of the 372 organisations interviewed have individuals who are responsible for their entire building portfolio.
- Maintenance and refurbishment functions are not generally managed separately. 77% of respondents have combined responsibility for the day-to-day upkeep and longer term refurbishment of properties, the majority of respondents adopt the same practices for maintenance and refurbishment whether owner or tenant.
- Three-quarters are taking a planned approach to their maintenance and a little under two-thirds pursue a planned programme of refurbishment. The average size of the maintenance budget amongst these major organisations is £3.4 million and refurbishment budgets average £5.2 million.
- 70% of the respondents interviewed were in direct control of the maintenance expenditure and 57% had similar control over the refurbishment expenditure. On average 56% of maintenance and 60% of refurbishment brand decisions are taken in-house.
- Where external parties are involved in the maintenance product decision process, this tends to be local general contractors or sub-contractors. As the building components involved become more specialised the importance of local and national specialist sub-contractors becomes apparent.
- The patterns of involvement for refurbishment are similar to those for maintenance in each product group, except here we see the involvement of external designers. 65% are aware of the makes or manufacturers for over half of the main components of their buildings. Respondents expect their involvement in product and brand selection to continue.
- 60% of the respondents responsible for maintenance and refurbishment are also involved in the choice of products for new building works. 55% operate standard specifications and 45% have approved lists of products. Less than one-quarter have policies of like-for-like replacement with original components.
- The single most important issue facing building managers today is conformity with Health and Safety legislation. This and the initial cost of products are the main criteria in production selection. Cost-in-use information and details of the after-sales service and support from manufacturers are areas where in-house organisations are particularly seeking improvements.
- The effect of the year 2000 date change upon their building products and systems is of particular concern to 29% of in-house organisations.
- The involvement of external building management companies in maintenance is less than 10%. Where used, they have a strong influence on product choice. One-third of in-house organisations expect outsourcing to play an increased role in their building management process.

3. RESEARCH SOURCES

- The research for the '98 Barbour Report was commissioned by Barbour Index and carried out by Lychgate in the spring of 1998 with the objective of gaining a better understanding of the product decision-making processes within building maintenance and refurbishment.

Discussions with manufacturers

- A series of discussions were held with product manufacturers to assess the level of current understanding of this sector, and to identify particular areas of interest which require qualifying and quantifying.

Desk research

- A review of existing published statistics on the size of the building maintenance and refurbishment market was undertaken, including discussions with the National Council of Building Material Producers (BMP). Little information exists on this market. Government collected statistics, which provide the base for many forecasts, treat new build, maintenance and refurbishment inconsistently across the various sectors. For example, major commercial refurbishment projects are included with new build and public non-housing repair and maintenance statistics include road repairs. The published figures have been re-apportioned to agree with the market definitions used in this report.

Pilot interviews

- 20 telephone interviews were carried out with leading private and public organisations to understand the building maintenance and refurbishment process and the extent of outsourcing. A detailed questionnaire was structured following this exercise.

Main telephone interview programme

- 372 in-depth telephone interviews averaging over 30 minutes were conducted with personnel responsible for the management of the maintenance and/or refurbishment processes. Leading organisations were selected mainly from the top 100 in the following sectors:

- **Number of interviews**

| | |
|--|------------|
| Retail | 32 |
| Financial | 24 |
| Leisure (including restaurant, pub, hotel chains, sports facilities) | 29 |
| Developers | 19 |
| Transport/distribution (includes public transport facilities such as airports, underground, rail, and distribution depots) | 23 |
| Utilities/telecommunications | 13 |
| Manufacturing (production facilities) | 48 |
| Other commercial (includes head offices of major organisations not included elsewhere) | 34 |
| Local authority housing | 32* |
| Local authority non-housing | 26* |
| Housing associations | 29 |
| NHS trusts | 38 |
| Central government | 29 |
| TOTAL NUMBER OF INTERVIEWS | 372 |

* Note: Total adds to 376 as 4 Local Authority respondents were responsible for both housing and non-housing buildings and their answers have been included in both categories. Results are based on 372 interviews unless otherwise stated. 344 of these respondents are involved in maintenance and 314 in refurbishment projects for their organisations.

Graphs and tables included in this Report represent results taken from all 372 interviews unless otherwise stated.

Case studies

- Four interviews with major organisations are included as case studies.

Telephone interviews with building maintenance and refurbishment service providers

- 28 interviews were conducted, principally at Director level, to understand how these companies operate and their role in the decision-making process.

Facilities Management Compendium user questionnaire

A questionnaire is distributed by Barbour Index to the 10,000 users of the facilities management compendium. The first 1,000 returns are independently analysed by Lychgate, and some of the results have contributed to the research upon which this report is based.

The Barbour Reports 1993-1997

Reference has been made to the findings of previous Barbour Reports where appropriate.

Specialist papers

A number of contributors have provided papers relevant to their specialist fields. These are:

FUTURE OF PROPERTY MANAGEMENT

a managing agents perspective

by Simon C. Young, Partner, King Sturge & Co

BUILDINGS FOR CUSTOMERS

a building surveyors view

by Trevor Mole BSc (Hons) FRICS, Partner, Property Tectonics, Building Surveyors Divisional President

MILLENNIUM BUG - THE ULTIMATE DEADLINE

will the Y2K problem bring building systems to a halt?

by John Auckland, Consultant, Premises & Facilities Management magazine

4. THE MARKET

As a first step the research set out to quantify the value of the maintenance and refurbishment market, in relation to new build, and show the split between the private and public sectors.

4.1 Definition and scope of the research

The report profiles the processes involved in the management of the maintenance and refurbishment of existing buildings. Maintenance is defined as the upkeep and repair of the existing fabric, interior fittings and services. Refurbishment includes alterations and any up-grading or replacement of these elements.

4.2 Basis of estimates

Published figures from a variety of sources such as Construction Forecasting and Research Limited (CFR) put total construction industry expenditure at £55 billion in 1996, with an expected total output of some £58 billion in 1997. (At the time of publication, 1997 figures are not available, and therefore calculations are based on forecast figures).

The government statistics upon which the published figures are based do not make a distinction in some sectors between new build and refurbishment.

To allow comparison between the size of the new build sector and expenditure on maintenance and refurbishment, the figures have been re-apportioned by Lychgate with advice from the BMP.

As part of this exercise, the following areas of ambiguity in the published statistics were identified and the figures adjusted to arrive at the market size estimates:

- private industrial and commercial building statistics for new build include major refurbishment
- public non-housing repair and maintenance includes the up-keep of roads
- expenditure by local authorities' direct labour organisations is not included in public sector figures

For this report the research has focused on certain sectors of the industry, as follows:

- private industrial and commercial buildings
- public non-housing buildings
- public housing including housing association controlled dwellings

Private housebuilding has been excluded from the report, as maintenance and refurbishment works in this sector generally falls within the DIY and 'jobbing builder' market. New private housebuilding, DIY and civil works are also excluded.

4.3 Market size and value

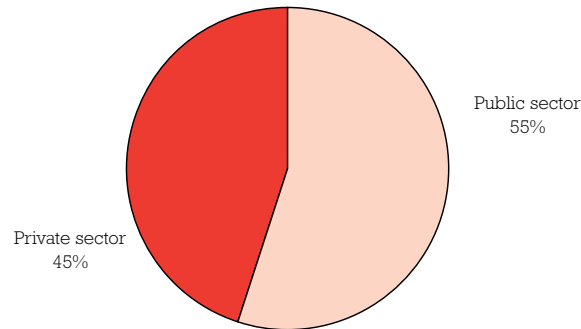
The government based statistics size "new build", in the sectors included in this report, at around £17 billion and "repair and maintenance" at £19 billion projected estimates at current prices for 1997, a total of £36 billion.

However, when the changes detailed above are taken into account, (i.e. refurbishment separated from new build where applicable, maintenance of roads excluded and expenditure by direct labour organisations added), new building work could be as low as £10 billion. Building maintenance and refurbishment however, is shown to be much greater, perhaps as much as 50% greater than the available figures at £28 billion. Private housebuilding, the DIY sector and civil works make up the balance of the published total construction industry figures.

These figures show clearly that the maintenance and refurbishment sector is greater than perceptions within the industry. There is a need for the construction industry and government to review the classification and collection of these important statistics.

Like figures on construction, those published for Facilities Management vary greatly dependent upon the inclusions within the estimates. One widely quoted figure, published by the University of Strathclyde in 1995, put the total FM market at £160 billion. This included such areas as infrastructure, environment, support services, telecommunications and transport. If the identifiable elements relating to building operations, maintenance and property management are extracted and inflated to 1997 prices, then again this estimates the expenditure at around £30 billion.

- Private/public share of maintenance and refurbishment expenditure



The maintenance and refurbishment estimate covers the public and private sectors. Each has differing needs and for those manufacturers who address both markets, the £28 billion estimate has been apportioned between the two. The public sector accounts for just over half of the total with the private sector slightly less.

In expenditure terms the significance of the building maintenance and refurbishment market is clear, and is likely to continue for the foreseeable future. Rising resistance to greenfield development, the cost of exploiting brownfield sites and the changing needs of the industrial and commercial communities will focus attention on the careful maintenance of the existing building stock and its on-going refurbishment and alteration to meet the demands of UK occupiers.

Building owners seeking to maximise the value of their built resources will meet this demand by keeping properties up-to-date in order to achieve the most competitive rental values and investment yields.

5. ORGANISATIONAL APPROACH TO BUILDING MANAGEMENT

The approach to and responsibility for managing building maintenance and refurbishment are examined by organisational group. The number of sites managed and the effect of tenure are identified.

5.1 Responsibility for building management

- Respondents responsible for entire building portfolio

| | |
|------------------------------|-----|
| ALL | 51% |
| Retail | 50% |
| Financial | 50% |
| Leisure | 62% |
| Developers | 42% |
| Transport/distribution | 78% |
| Utilities/telecommunications | 15% |
| Manufacturing | 29% |
| Other commercial | 44% |
| Local authority housing | 31% |
| Local authority non-housing | 46% |
| Housing associations | 60% |
| NHS trusts | 89% |
| Central government | 48% |

Half of organisations interviewed have individuals who are responsible for their entire building portfolio. Where organisations have large numbers of sites (such as the utilities, multi-site manufacturing companies, local authorities) the likelihood of one person having overall responsibility reduces.

Where respondents are responsible for only part of the portfolio, on average this still represents 40% of their organisation's total building stock.

- Average number of "sites" managed per respondent

| | |
|-----------------------------------|------|
| AVERAGE FOR ALL ORGANISATIONS | 1028 |
| Retail | 384 |
| Financial | 256 |
| Leisure | 320 |
| Developers | 139 |
| Transport/distribution | 15 |
| Utilities/telecommunications | 589 |
| Manufacturing | 10 |
| Other commercial | 62 |
| AVERAGE FOR PRIVATE ORGANISATIONS | 185 |
| Local authority housing | 6803 |
| Local authority non-housing | 1757 |
| Housing associations | 4183 |
| NHS trusts | 17 |
| Central government | 112 |
| AVERAGE FOR PUBLIC ORGANISATIONS | 2275 |

The average number of sites managed varies according to the type of organisation and the nature of the property. Local authorities and Housing associations with large numbers of homes show very high numbers of "sites" whereas manufacturing companies have only small average site numbers but each is likely to be of considerable built area, surrounding acreage and consequential value.

- **Organisations with centralised management**

| | |
|------------------------------|-----|
| ALL | 70% |
| Retail | 72% |
| Financial | 67% |
| Leisure | 76% |
| Developers | 89% |
| Transport/distribution | 83% |
| Utilities/telecommunications | 62% |
| Manufacturing | 61% |
| Other commercial | 53% |
| Local authority housing | 69% |
| Local authority non-housing | 62% |
| Housing associations | 59% |
| NHS trusts | 97% |
| Central government | 66% |

Amongst the sectors there are differences in approach to property management. On average, 70% of organisations manage their property centrally, 19% on a regional basis and 11% dependent upon the type of property or some other departmental function.

Maintenance and refurbishment functions are not generally managed separately. 77% of respondents have combined responsibility for the day-to-day upkeep and longer term refurbishment of properties.

The incidence of separate departments with specific roles covering these two operations was higher amongst the Retailers and Developers interviewed.

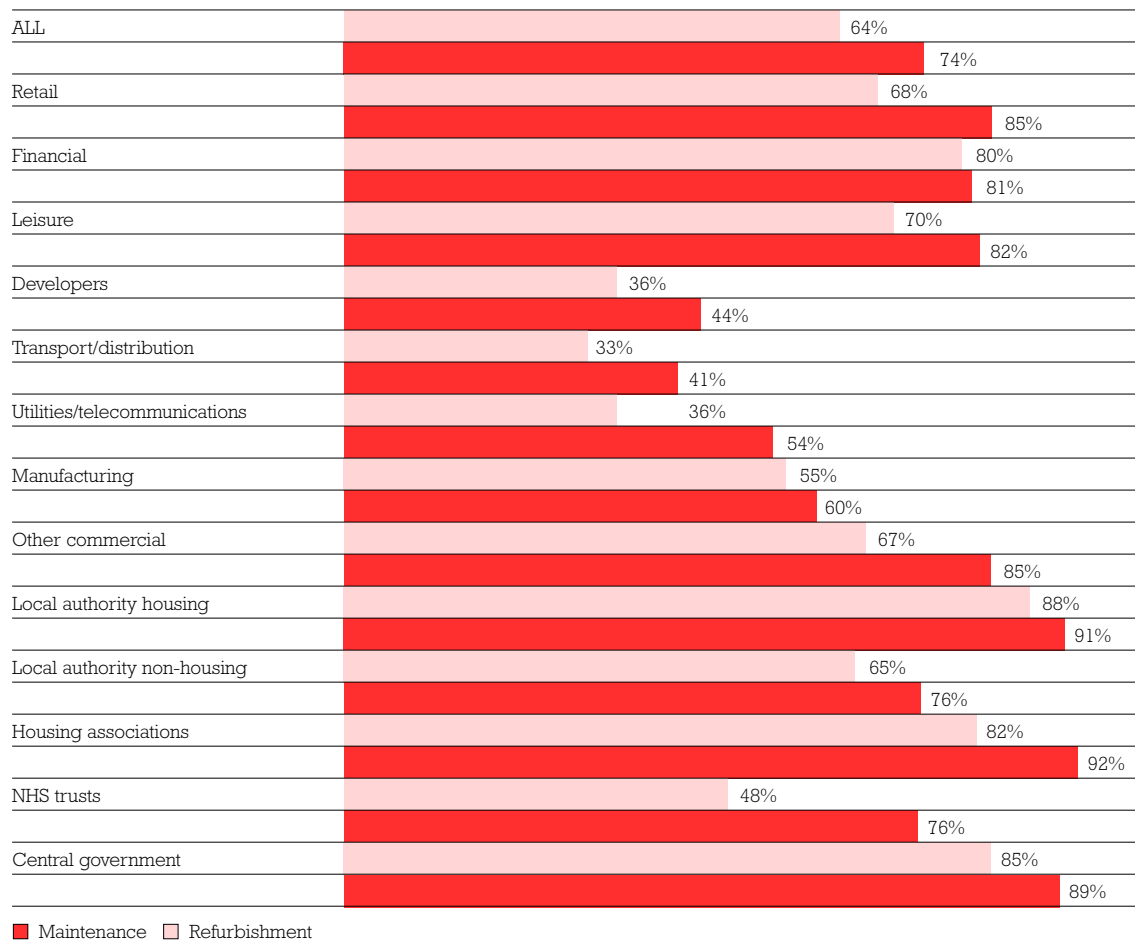
5.2 **Property tenure**

The nature of property tenure might be expected to influence policies towards maintenance and refurbishment. Amongst the organisations interviewed, 69% own properties which they occupy themselves whilst 25% own properties which are leased out to others. 39% occupy facilities which are rented from other owners. Many organisations have a mix of tenures.

60% of those leasing as landlords or renting as tenants said there was no difference in the approach taken to the maintenance of rented properties compared to freehold ownerships. According to these respondents, the same regimes for maintenance and refurbishment are pursued whether owner or tenant.

5.3 Ad hoc or planned work programmes

- Organisations with planned maintenance and refurbishment programmes



Ad hoc approaches to maintenance and refurbishment will make targeting this work difficult for manufacturers. Planned approaches have defined scope and timescales which can be identified and addressed and, fortunately, this is the approach being pursued by the majority of organisations. Around three-quarters are taking a planned approach to their maintenance and a little under two-thirds pursue a planned programme of refurbishment.

6. BUDGETS

6.1 Average size of budget

- Maintenance and refurbishment – average budget (£m)

| | | |
|------------------------------|-----|------|
| ALL | 3.4 | 5.2 |
| Retail | 6.6 | 11.4 |
| Financial | 7.6 | 11.1 |
| Leisure | 2.8 | 10.2 |
| Developers | 2.2 | 3.1 |
| Transport/distribution | 0.9 | 1.6 |
| Utilities/telecommunications | 1.8 | 3.8 |
| Manufacturing | 1.1 | 3.8 |
| Other commercial | 2.1 | 3.7 |
| Local authority housing | 4.8 | 6.6 |
| Local authority non-housing | 2.6 | 3.9 |
| Housing associations | 3.8 | 3.0 |
| NHS trusts | 1.6 | 1.8 |
| Central government | 7.3 | 8.2 |

■ Maintenance □ Refurbishment

Average budgets for maintenance and refurbishment are significant but vary considerably by organisational group. The Retail and Financial sectors have around double the budgets found overall. The Leisure sector is spending over three and a half times as much on refurbishment as it does on maintenance. Maintaining and upgrading a very visible public image is of particular commercial importance for success in these three sectors.

Within the NHS trusts the situation is very different. Here, maintenance and refurbishment budgets are well below the average and represent a small fraction of what is spent by those operating in the high street.

6.2 Responsibility for expenditure

- Responsibility for spending budgets

| | Maintenance | | Refurbishment | |
|------------------------------|-------------|-----------------|---------------|-----------------|
| | Respondent | Another in dept | Respondent | Another in dept |
| ALL | 70% | 38% | 57% | 42% |
| Retail | 72% | 25% | 44% | 53% |
| Financial | 63% | 33% | 50% | 54% |
| Leisure | 76% | 38% | 62% | 45% |
| Developers | 58% | 32% | 53% | 26% |
| Transport/distribution | 78% | 22% | 70% | 22% |
| Utilities/telecommunications | 77% | 38% | 77% | 23% |
| Manufacturing | 78% | 33% | 69% | 39% |
| Other commercial | 79% | 32% | 59% | 47% |
| TOTAL PRIVATE | 73% | 32% | 60% | 41% |
| Local authority housing | 59% | 56% | 50% | 44% |
| Local authority non-housing | 88% | 38% | 65% | 35% |
| Housing associations | 59% | 55% | 38% | 62% |
| NHS trusts | 66% | 39% | 47% | 45% |
| Central government | 59% | 48% | 62% | 34% |
| TOTAL PUBLIC | 65% | 47% | 53% | 45% |

Note: adds to over 100% where more than one person involved. Where the above figures do not add to 100%, another party such as the tenants or building owner are responsible, where the property is leased.

70% of the respondents interviewed were in direct control of the maintenance expenditure and 57% had similar control over the refurbishment expenditure. Where control was not with the individual interviewed, it generally remained within the department and was the responsibility of a colleague.

7. THE DECISION-MAKERS

Levels of involvement in brand decision-making for maintenance and refurbishment are identified and profiled by organisational and product group. To assist manufacturers in targeting these important decision-makers, the most common job titles are given later in this section.

7.1 Involvement in brand decision-making

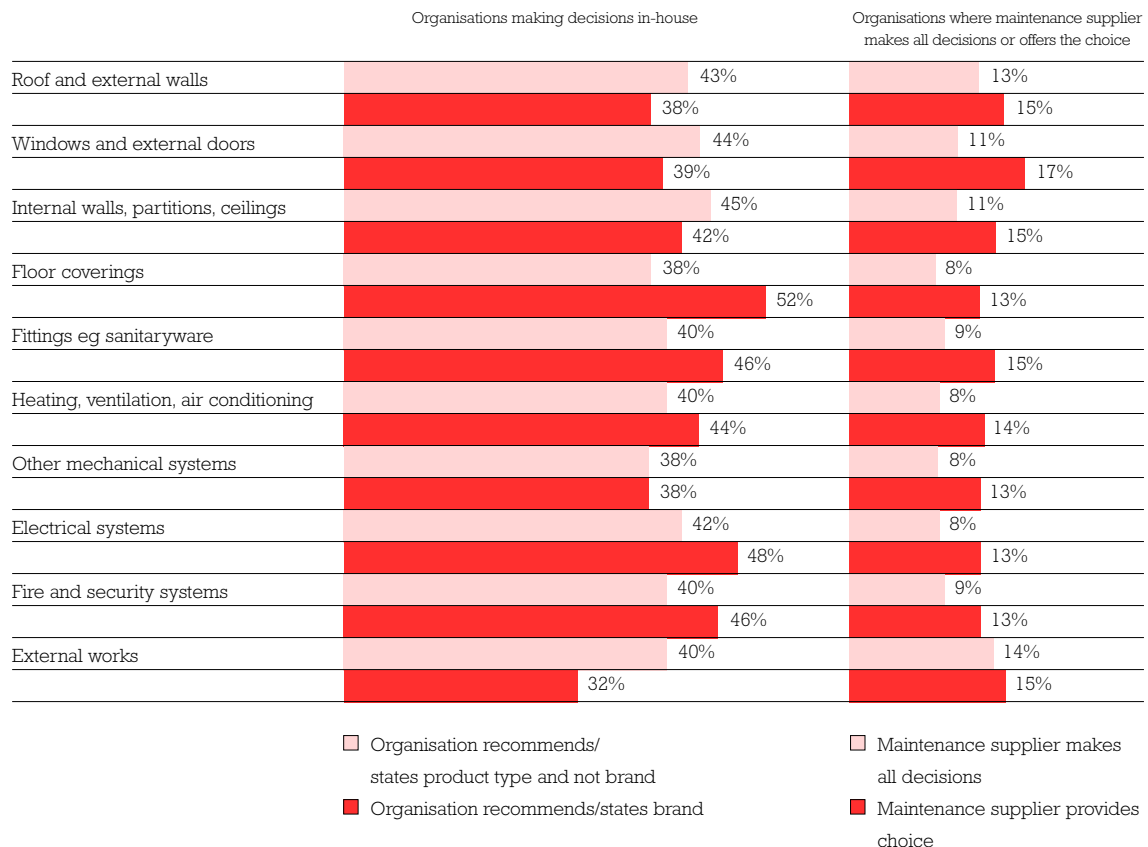
Respondents in this study have centralised responsibility for maintenance and refurbishment with direct control of significant budgets. Their involvement in decisions about the products used in their work programmes has been examined in two stages. Firstly, the specification of material or product type and secondly the choice of brand.

To allow manufacturers to apply these results to their particular area of interest, the components of a building have been structured into ten broad groups. These are as follows:

- Roof and external walls
- Windows and external doors
- Internal walls, partitions, doors and ceilings
- Floor coverings
- Fittings, eg sanitaryware
- Heating, ventilation and air conditioning
- Other mechanical systems, eg lifts, escalators
- Electrical systems including lighting
- Fire and security systems
- External works

- Maintenance

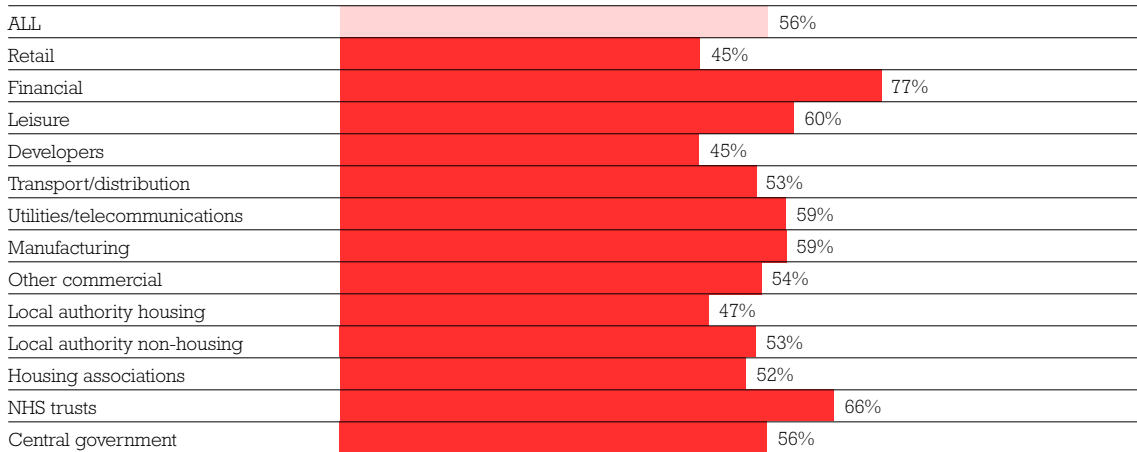
- Involvement in product type and brand decisions for maintenance. (base: 344 involved in maintenance)



Note: The figures may add to over 100% where more than one answer was given, depending on the situation/project size or nature.

The graphs show the percentage of maintenance product decisions made firstly in-house and secondly by other parties. The largest proportion of decisions across all product groups are made internally. However, a maintenance supplier may be involved in offering a choice to the internal decision-maker. In only a small proportion of organisations are they responsible for the whole product and brand decision process.

- **Average % of brand decisions made in-house for maintenance** (base: 344 involved in maintenance)



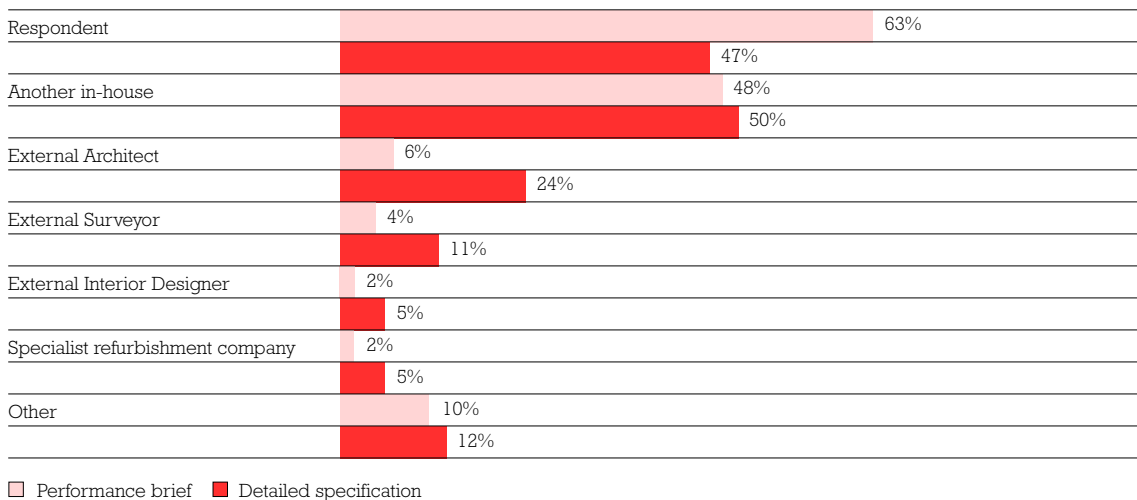
On average 56% of brand decisions are taken in-house. This includes both the respondent taking the decision directly and selecting a choice from options offered by another party such as a maintenance supplier.

Where decisions are made internally, in eight out of ten organisations they are taken by the respondents themselves rather than another in-house person.

- **Refurbishment**

The approach to refurbishment decision-making is more akin to the new build process than that taken for maintenance. It is likely to involve, as a first step, a brief stating the performance parameters, followed by a detailed specification, which may include brands.

- **Involvement in preparation of brief and detailed specification** (base: 314 involved in refurbishment)



□ Performance brief ■ Detailed specification

Over six in ten of the respondents to this survey were responsible for preparing these performance briefs for their refurbishment projects. There appears to be minimal involvement by external professionals in the early stages.

However, when the process moves on to the detailed specification, external involvement increases but the process is still dominated by our respondents and their in-house colleagues.

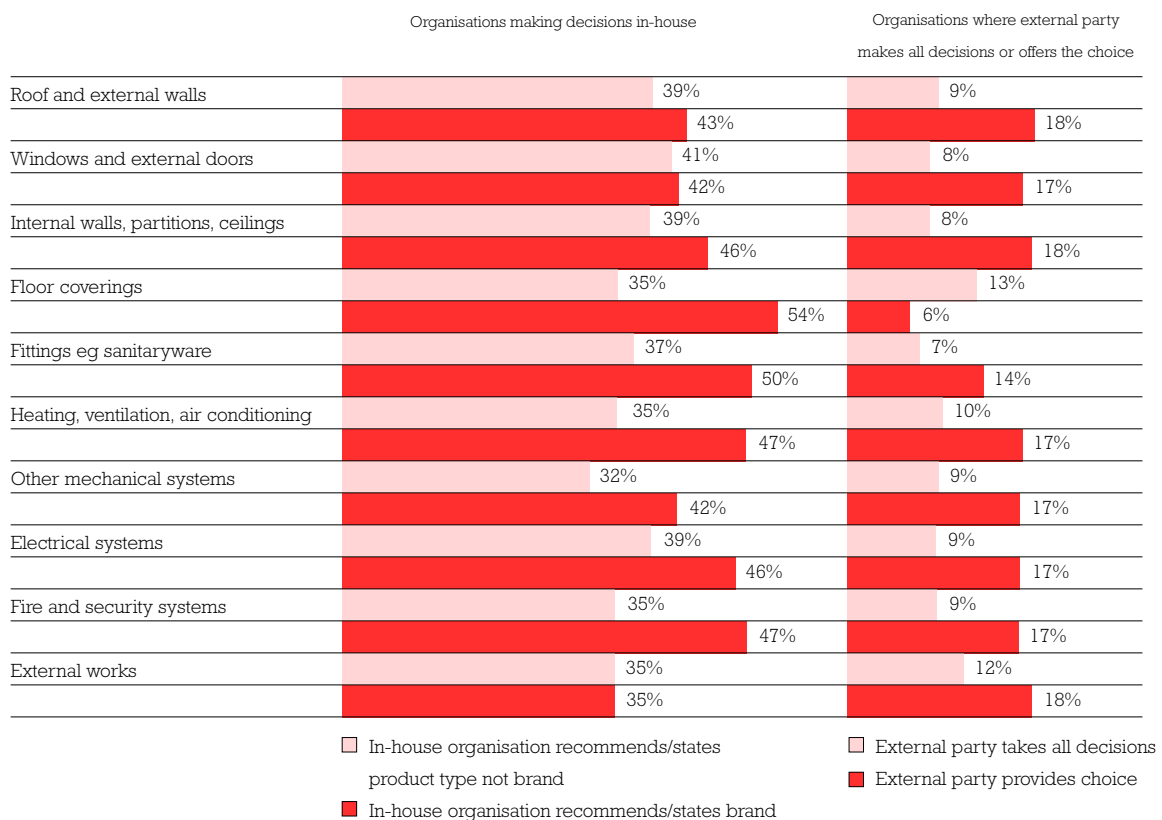
● **Involvement in preparation of detailed product specification for refurbishment** (base: 314 involved in refurbishment)

| | Respondent | Another in-house | External Architect | Other |
|------------------------------|------------|------------------|--------------------|-------|
| ALL | 47% | 45% | 24% | 33% |
| Retail | 64% | 36% | 5% | 19% |
| Financial | 35% | 55% | 25% | 20% |
| Leisure | 33% | 41% | 48% | 64% |
| Developers | 57% | 36% | 21% | 28% |
| Transport/distribution | 48% | 48% | 10% | 25% |
| Utilities/telecommunications | 45% | 45% | 18% | 18% |
| Manufacturing | 59% | 34% | 25% | 24% |
| Other commercial | 37% | 50% | 20% | 20% |
| TOTAL PRIVATE | 48% | 42% | 23% | 30% |
| Local authority housing | 50% | 58% | 17% | 8% |
| Local authority non-housing | 74% | 52% | 4% | 17% |
| Housing associations | 36% | 59% | 27% | 50% |
| NHS trusts | 55% | 52% | 45% | 60% |
| Central government | 19% | 19% | 27% | 69% |
| TOTAL PUBLIC | 46% | 48% | 26% | 44% |

Note: Adds to over 100% as more than one party involved. Other includes Interior Designers, Surveyors, FM companies, specialist refurbishment companies and, in the case of the NHS and Central Government, external consultants and managing agents.

External Architects are twice as likely to be involved in the Leisure sector in preparing a detailed product specification. The Leisure industry is also more likely to involve Interior Designers, Surveyors and specialist refurbishment companies (included in the “other” category in the table above). In recent times there have been extended programmes of themed and standardised refurbishment which could account for this higher involvement by external design professionals.

● **Involvement in product type and brand decisions for refurbishment.** (base: 314 involved in refurbishment)



Note: The figures may add to over 100% where more than one answer was given, depending on the situation.

As found with maintenance, high levels of brand decisions for refurbishment works are taken in-house.

Examining this by our ten building product groups again reveals high levels of brand decision-making internally where respondents have day-to-day experience of maintaining and living with the products they intend using in their refurbishment works.

Across all the building product groups, no more than 13% of organisations allow external parties to make their product decisions. More typically they expect them to offer choices from which they, the customer, make the final selection.

As with maintenance, where decisions are made internally, eight out of ten of our respondents are making these decisions themselves.

● **Average % of brand decisions made in-house for refurbishment** (base: 314 involved in refurbishment)

| | |
|------------------------------|-----|
| ALL | 60% |
| Retail | 57% |
| Financial | 81% |
| Leisure | 70% |
| Developers | 39% |
| Transport/distribution | 49% |
| Utilities/telecommunications | 50% |
| Manufacturing | 57% |
| Other commercial | 57% |
| Local authority housing | 57% |
| Local authority non-housing | 60% |
| Housing associations | 57% |
| NHS trusts | 76% |
| Central government | 53% |

On average 60% of brand decisions are taken in-house, a similar figure to that found in maintenance decisions. This figure includes those taking decisions directly, and where they are selecting from a choice offered by an external party.

7.2 Identifying the decision-makers

To aid targeting of these highly significant brand decision-makers, job titles of those involved in maintenance and/or refurbishment have been analysed across the organisations interviewed. The following list gives guidance to the most encountered job titles, shown in order of frequency.

| | |
|---------------------------------|---|
| Retail | Maintenance Manager • Property and Services Manager • Facilities Manager Contracts Manager • Head of Property |
| Financial | Facilities Manager • Building/Property Services Manager Area Premises/Project/Building Surveyor • Project Manager/Director |
| Leisure | Maintenance Manager • Building Services Manager • Senior Building Surveyor Head of Projects |
| Developers | Head of Property Management • Property Manager • Operations Manager Investment Manager |
| Transport/distribution | Estates Manager • Airport Manager Engineering Manager/Maintenance Engineering Manager • Director/General Manager |
| Utilities/telecommunications | Facilities Manager • Building Maintenance Manager |
| Manufacturing | Maintenance Manager • Engineering Manager/Chief Engineer • Site Services Manager |
| Other commercial | Facilities Manager • Services Manager • Maintenance Manager Building Services Manager |
| Local authorities – housing | Housing Manager • Property Services Manager • Repair and Maintenance Manager Surveyor |
| Local authorities – non-housing | Building Surveying Manager • Property Manager • Principal Building Services Manager Facilities Manager |
| Housing associations | Maintenance Manager • Property Services Manager • Senior Building Surveyor Maintenance Services Manager |
| NHS trusts | Estates Manager/Director • Maintenance Manager • Facilities Manager |
| Central government | Facilities Manager • Accommodation and Services Manager • Estates Manager |

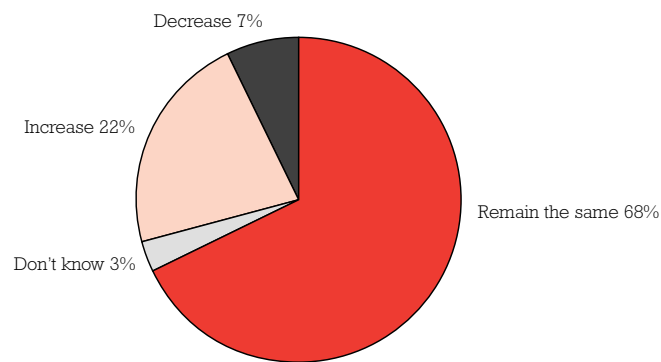
One method often used for targeting decision-makers involves identifying common membership of a trade or professional organisation. However, amongst our sample, 45% do not belong to any professional body. Amongst those who were, the most mentioned were as follows:

- **Membership of associations**

| | |
|---|-----|
| RICS | 14% |
| CIOB | 14% |
| British Institute of Facilities Managers | 5% |
| Institute of Maintenance and Building Management | 3% |
| Institute of Electrical Engineers | 3% |
| RIBA | 2% |
| Institute of Mechanical Engineers | 2% |
| Chartered Institute of Building Service Engineers | 2% |

7.3 Future levels of involvement

- **Change in involvement in product and brand decision-making**



Respondents clearly believe their existing high levels of involvement in product and brand decision-taking will continue in the near future and may increase. Asked 'Do you expect your involvement in the selection of brands of products to change in the next two years?', 68% said it would remain the same and 22% expect it to increase.

- **Anticipated change in involvement (net % of organisations expecting increased involvement)**

| | |
|------------------------------|-----|
| ALL | 15% |
| Retail | 32% |
| Financial | 0% |
| Leisure | 17% |
| Developers | 6% |
| Transport/distribution | 13% |
| Utilities/telecommunications | 15% |
| Manufacturing | 4% |
| Other commercial | 15% |
| Local authority housing | 22% |
| Local authority non-housing | 11% |
| Housing associations | 38% |
| NHS trusts | 3% |
| Central government | 11% |

When examined by organisation type, there are some interesting differences. Respondents in the Financial sector and NHS trusts do not anticipate greater involvement, as they already have high levels of involvement in the brand decision process, whereas others have greater scope for increase.

7.4 Appointment of contractors

The appointment of contractors to carry out maintenance and refurbishment work is another function which the research has shown to be carried out in-house. In about seven out of ten organisations it is the key decision-maker, our respondent, who appoints contractors. Very rarely is another party involved.

In four out of ten cases someone else in the organisation is involved in the consultation process. In only 7% of organisations is an external Architect given responsibility for the appointment of contractors for refurbishment projects.

7.5 Involvement in new build

On top of these decision-makers' considerable involvement in product and brand selection for maintenance and refurbishment, the study has identified their significant input into new build projects within their organisations. Major organisations have recognised the benefits of injecting the experience of 'living' with products back into the new build design process. Leading retailer, J. Sainsbury, combined its facilities management and construction divisions with the objective of reducing its annual property maintenance bill by £10 million. A Director of the new division was reported as saying that a major aim of the move is to guard against design problems that add to maintenance costs.

The research has found evidence which suggests that other organisations are following a similar policy. 60% of the respondents said they are very, or fairly involved in the choice of products for new building works. Those in the private sector are more likely to be involved than those in the public sector, reflecting perhaps the clearer separation of the maintenance and new build responsibilities into different departments in Local authorities and Central government. In contrast, 85% of respondents from NHS trusts stated they had an involvement in new build.

7.6 External parties involved in product and brand decision-making

Although a high proportion of product and brand decision-making has been shown to remain internally within in-house organisations, external companies have involvement in around 40% - 44% of instances. They may be selecting a brand from a list of recommendations made by their clients, offering a choice of recommendations to their clients or, less typically, making a decision without reference to the client.

The types of company making these decisions have been examined for both maintenance and refurbishment, across our ten building product groups.

- Maintenance

Local general contractors or sub-contractors are preferred for maintaining the general building fabric, but as the building components involved become more specialised in such areas as floor coverings, heating, ventilation and electrical systems, then the emphasis shifts to the local specialist sub-contractors. Where systems are particularly complex, (for example mechanical systems such as lifts and escalators, fire and security systems) the importance of national specialist sub-contractors becomes apparent.

Across all ten product groups, the involvement of specialist facilities management companies and product manufacturers in maintenance is very low, nowhere exceeding 10% of respondents.

Recently there has been press coverage of moves by leading contractors to offer 'packaged' maintenance and repair services. General contractor Mowlem has renamed its maintenance arm "Skillbase" with the intention of exploiting packaged opportunities in the domestic and commercial maintenance and repair markets.

To test the extent to which this is already occurring, our respondents were asked whether they use the same companies to maintain more than one area of the building:

- 40% said they use the same company.
- Around three-quarters of these use them to maintain the building fabric, the roof, external walls, windows, external doors and the internal walls and partitions.
- Where systems are specialised or sophisticated, the tendency shifts towards using contractors with expertise in these particular areas, rather than general contractors.
- 61% of all respondents use the same companies for planned as for reactive, unplanned maintenance.
- When emergency works are necessary, one-quarter of all respondents turn to local companies.
- Around 5% use specialist FM providers for the maintenance of their buildings.
- Results of analysis of 1,000 of the 10,000 questionnaires sent out with the Barbour Index facilities management compendium also support this, with 9% of companies buying in a total FM contract for their building maintenance.
- **Refurbishment**

The patterns of involvement are similar to those for maintenance in each product group, except here we see the involvement of external designers.

As with maintenance, where the general building fabric is being refurbished, it tends to be the local general building contractors leading the process but as products become more specialised or systems more complex, such as electrical, fire and security systems, then the emphasis moves towards specialist sub-contractors based locally and nationally.

The importance of the internal decision-maker has been demonstrated in previous sections. Where there is scope for input, the external parties involved have been identified. In all product groups a clear secondary decision-influencer emerges.

Maintenance (base: 344 involved in maintenance)

Roof and external walls
(scope for external input in 62% of organisations)

| | |
|-----------------------------|-----|
| Local general contractor | 52% |
| National general contractor | 20% |
| Local sub-contractor | 34% |
| National sub-contractor | 19% |
| FM companies | 5% |
| Manufacturers | 4% |
| Other | 8% |

Windows and external doors
(scope for external input in 61% of organisations)

| | |
|-----------------------------|-----|
| Local general contractor | 48% |
| National general contractor | 21% |
| Local sub-contractor | 35% |
| National sub-contractor | 23% |
| FM companies | 6% |
| Manufacturers | 3% |
| Other | 8% |

Internal walls, doors, partitions, ceilings
(scope for external input in 58% of organisations)

| | |
|-----------------------------|-----|
| Local general contractor | 59% |
| National general contractor | 18% |
| Local sub-contractor | 27% |
| National sub-contractor | 9% |
| FM companies | 6% |
| Manufacturers | 3% |
| Other | 8% |

Refurbishment (base: 314 involved in refurbishment)

Roof and external walls
(scope for external input in 57% of organisations)

| | |
|-----------------------------|-----|
| Local general contractor | 44% |
| National general contractor | 28% |
| Local sub-contractor | 24% |
| National sub-contractor | 10% |
| External designers | 24% |
| Specialist refurb companies | 5% |
| Manufacturers | 1% |
| Other | 8% |

Windows and external doors
(scope for external input in 58% of organisations)

| | |
|-----------------------------|-----|
| Local general contractor | 38% |
| National general contractor | 25% |
| Local sub-contractor | 29% |
| National sub-contractor | 16% |
| External designers | 24% |
| Specialist refurb companies | 5% |
| Manufacturers | 2% |
| Other | 9% |

Internal walls, doors, partitions, ceilings
(scope for external input in 54% of organisations)

| | |
|-----------------------------|-----|
| Local general contractor | 45% |
| National general contractor | 24% |
| Local sub-contractor | 21% |
| National sub-contractor | 9% |
| External designers | 27% |
| Specialist refurb companies | 5% |
| Manufacturers | 1% |
| Other | 8% |

Maintenance (base: 344 involved in maintenance)

Floor coverings
(scope for external input in 48% of organisations)

| | |
|-----------------------------|-----|
| Local general contractor | 32% |
| National general contractor | 10% |
| Local sub-contractor | 46% |
| National sub-contractor | 20% |
| FM companies | 6% |
| Manufacturers | 4% |
| Other | 10% |

Fittings (such as sanitaryware, kitchens)
(scope for external input in 54% of organisations)

| | |
|-----------------------------|-----|
| Local general contractor | 46% |
| National general contractor | 15% |
| Local sub-contractor | 36% |
| National sub-contractor | 12% |
| FM companies | 7% |
| Manufacturers | 4% |
| Other | 9% |

Heating, ventilation, air conditioning
(scope for external input in 56% of organisations)

| | |
|-----------------------------|-----|
| Local general contractor | 17% |
| National general contractor | 10% |
| Local sub-contractor | 46% |
| National sub-contractor | 37% |
| FM companies | 4% |
| Manufacturers | 5% |
| Other | 12% |

Other mechanical systems (eg lifts, escalators)
(scope for external input in 62% of organisations)

| | |
|-----------------------------|-----|
| Local general contractor | 16% |
| National general contractor | 9% |
| Local sub-contractor | 30% |
| National sub-contractor | 46% |
| FM companies | 4% |
| Manufacturers | 9% |
| Other | 10% |

Electrical systems (including lighting)
(scope for external input in 52% of organisations)

| | |
|-----------------------------|-----|
| Local general contractor | 20% |
| National general contractor | 9% |
| Local sub-contractor | 51% |
| National sub-contractor | 30% |
| FM companies | 5% |
| Manufacturers | 4% |
| Other | 9% |

Refurbishment (base: 314 involved in refurbishment)

Floor coverings
(scope for external input in 46% of organisations)

| | |
|-----------------------------|-----|
| Local general contractor | 23% |
| National general contractor | 13% |
| Local sub-contractor | 37% |
| National sub-contractor | 23% |
| External designers | 26% |
| Specialist refurb companies | 6% |
| Manufacturers | 1% |
| Other | 10% |

Fittings (such as sanitaryware, kitchens)
(scope for external input in 50% of organisations)

| | |
|-----------------------------|-----|
| Local general contractor | 35% |
| National general contractor | 22% |
| Local sub-contractor | 27% |
| National sub-contractor | 14% |
| External designers | 28% |
| Specialist refurb companies | 4% |
| Manufacturers | 1% |
| Other | 9% |

Heating, ventilation, air conditioning
(scope for external input in 53% of organisations)

| | |
|-----------------------------|-----|
| Local general contractor | 17% |
| National general contractor | 12% |
| Local sub-contractor | 39% |
| National sub-contractor | 34% |
| External designers | 29% |
| Specialist refurb companies | 3% |
| Manufacturers | 2% |
| Other | 9% |

Other mechanical systems (eg lifts, escalators)
(scope for external input in 58% of organisations)

| | |
|-----------------------------|-----|
| Local general contractor | 10% |
| National general contractor | 10% |
| Local sub-contractor | 26% |
| National sub-contractor | 40% |
| External designers | 29% |
| Specialist refurb companies | 4% |
| Manufacturers | 7% |
| Other | 9% |

Electrical systems (including lighting)
(scope for external input in 54% of organisations)

| | |
|-----------------------------|-----|
| Local general contractor | 15% |
| National general contractor | 12% |
| Local sub-contractor | 46% |
| National sub-contractor | 29% |
| External designers | 27% |
| Specialist refurb companies | 4% |
| Manufacturers | 2% |
| Other | 8% |

Maintenance (base: 344 involved in maintenance)

Fire and security
(scope for external input in 54% of organisations)

| | |
|-----------------------------|-----|
| Local general contractor | 12% |
| National general contractor | 6% |
| Local sub-contractor | 42% |
| National sub-contractor | 49% |
| FM companies | 5% |
| Manufacturers | 5% |
| Other | 8% |

Refurbishment (base: 314 involved in refurbishment)

Fire and security
(scope for external input in 53% of organisations)

| | |
|-----------------------------|-----|
| Local general contractor | 8% |
| National general contractor | 9% |
| Local sub-contractor | 40% |
| National sub-contractor | 36% |
| External designers | 28% |
| Specialist refurb companies | 4% |
| Manufacturers | 3% |
| Other | 8% |

External works
(scope for external input in 68% of organisations)

| | |
|-----------------------------|-----|
| Local general contractor | 48% |
| National general contractor | 21% |
| Local sub-contractor | 35% |
| National sub-contractor | 23% |
| FM companies | 6% |
| Manufacturers | 3% |
| Other | 8% |

External works
(scope for external input in 65% of organisations)

| | |
|-----------------------------|-----|
| Local general contractor | 43% |
| National general contractor | 26% |
| Local sub-contractor | 17% |
| National sub-contractor | 5% |
| External designers | 21% |
| Specialist refurb companies | 4% |
| Manufacturers | 1% |
| Other | 13% |

Note: The graphs show, where there is scope for external input, the proportion of product and brand decisions which are influenced by each party.

7.7 Change of brand

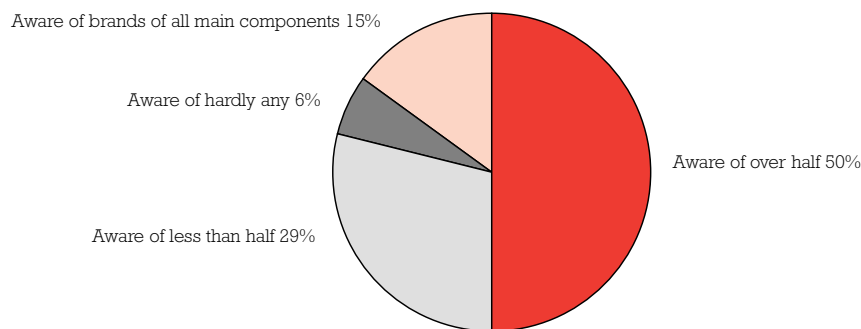
Brand switching is a common practice in construction and the research set out to identify the extent to which in-house organisations believe their decisions are being altered. Only 12% of respondents stated that they were aware that their choices are very or fairly frequently changed. Just over half said this happens to them occasionally but one-quarter considered that this never happens.

However, they were quick to highlight their continued involvement and control over this process. 88% of those who said they were aware of changes taking place always or usually approve the change being made by another party - typically the contractors appointed to carry out the work.

8. PRODUCT AWARENESS AND SPECIFICATION POLICIES

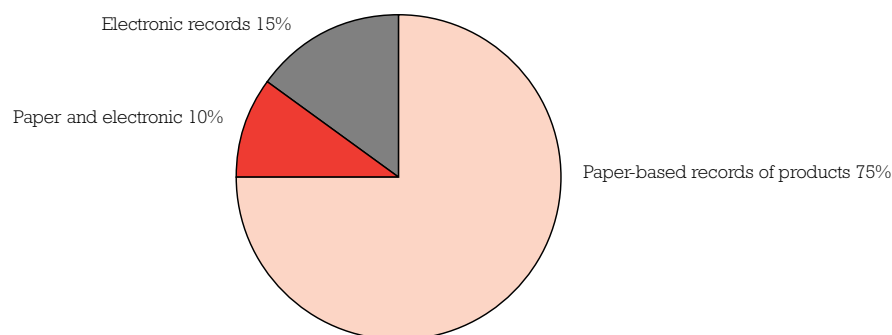
The study measured the extent to which respondents considered themselves aware of the main components within their buildings. The incidence of standard policies applied during the specification process was also examined.

8.1 Brand awareness of main building components



65% said they were aware of the makes or manufacturers for over half of these key items.

8.2 Maintenance of product records



Only 15% have already gone over totally to electronic-based records of the products used in their buildings, although one-quarter of those still with paper expect to computerise within the next two years. The provision of product information in electronic formats will clearly assist in this process.

In the '97 Barbour Report "Electronic Delivery of Product Information", 39% of in-house organisations interviewed would prefer to have product information made available to them in future on CD ROM.

8.3 Incidence of standard policies

In previous Barbour Reports, particularly those which examined the involvement of Contractors and Clients in the specification and brand selection processes, the occurrence of standard specifications and the maintenance of approved lists of products were highlighted as important criteria within the product selection process.

Identifying the existence of such policies, influencing their content and occupying a privileged position within them, is a major objective for many manufacturers. Research has shown that standard specifications are developed and products selected for inclusion through monitoring performance in use, and establishing a proven track record. Such experience is gathered in the maintenance and refurbishment processes and it is not therefore surprising to find that nearly two-thirds of the respondents to this survey have standard specifications and/or approved product lists.

- Use of standard specifications and approved product lists

| | Standard specifications | Approved product lists | Neither |
|------------------------------|-------------------------|------------------------|---------|
| ALL | 55% | 45% | 36% |
| Retail | 59% | 53% | 28% |
| Financial | 79% | 71% | 21% |
| Leisure | 52% | 55% | 34% |
| Developers | 32% | 16% | 68% |
| Transport/distribution | 35% | 26% | 61% |
| Utilities/telecommunications | 54% | 46% | 38% |
| Manufacturing | 51% | 53% | 33% |
| Other commercial | 38% | 41% | 50% |
| TOTAL PRIVATE | 50% | 47% | 40% |
| Local authority housing | 72% | 41% | 16% |
| Local authority non-housing | 50% | 31% | 42% |
| Housing associations | 76% | 59% | 17% |
| NHS trusts | 55% | 45% | 39% |
| Central government | 59% | 31% | 31% |
| TOTAL PUBLIC | 63% | 42% | 29% |

Analysis of these policies reveals a higher proportion of standard specifications used in the public sector whereas there is a higher level of approved product lists used by private sector organisations. Notably, just under 60% of Housing associations and over 70% of Financial organisations say they operate approved product lists.

The use of standard policies in product decision-making was also examined in the '95 Barbour Report, "The Influence of Clients on Product Decisions", based on research with 607 in-house organisations. The incidence of standard specifications, applied for consistency of approach, has shown a slight increase; in the 1995 survey, 46% operated to internal standard specifications, compared with 55% in this year's survey. 43% in 1995 had approved product lists, a similar figure to that identified in this research.

All product areas are affected by these standardised approaches to specification and product selection, but there are differences across the ten product groups. The higher numbers of organisations operating them occur in the product groups where performance becomes more critical and components or maintenance tends to be more complex. This also aligns with the tendency to move from general contractors to specialist sub-contractors, identified in the previous section.

- **Product areas affected by standard specifications and/or approved product lists** (base: all organisations)

| | |
|--|-----|
| Roof and external walls | 44% |
| Windows and external doors | 45% |
| Internal walls, partitions, ceilings | 48% |
| Floor coverings | 51% |
| Fittings eg sanitaryware | 47% |
| Heating, ventilation, air conditioning | 51% |
| Other mechanical systems | 44% |
| Electrical systems | 50% |
| Fire and security systems | 50% |
| External works | 36% |

The selection criteria for products included within approved lists was examined and the results are similar to those identified in previous Barbour reports. As before, qualification is based upon life with the product, making sure it is tried and tested and proven in use. This is then reviewed by an in-house team who are charged with reinvesting this experience into future decision-making.

- **How products get onto approved lists (as % of those with approved lists)** (base: 167)

| | |
|--|-----|
| Past experience/proven in use | 47% |
| Product reviewed/discussed by committee/team | 43% |
| Manufacturers forward literature which is then discussed | 23% |
| Product is tested out | 16% |
| Head office holds lists | 8% |
| Must meet internal standards | 6% |
| Approach by manufacturers | 4% |
| Recommendation by another party | 4% |
| Another department's responsibility | 3% |

8.4 Like-for-like replacement policies

Manufacturers supplying products included in new construction work have a potential foothold for a longer term relationship with the building owner. If this relationship is firmly established and well supported it can lead to a product lifetime of spares supply and maintenance service - important revenue streams for many manufacturers.

The study has examined the extent to which those taking the decisions for building maintenance and refurbishment pursue policies of replacing original components on a 'like-for-like' basis.

- Product groups affected by policies of like-for-like replacement

| | |
|--|-----|
| Roof and external walls | 25% |
| Windows and external doors | 25% |
| Internal walls, partitions, ceilings | 23% |
| Floor coverings | 23% |
| Fittings eg sanitaryware | 22% |
| Heating, ventilation, air conditioning | 24% |
| Other mechanical systems | 23% |
| Electrical systems | 25% |
| Fire and security systems | 22% |
| External works | 15% |

The proportion of organisations with these policies is not high, with no more than one quarter in any of the ten product groups. Manufacturers who persuade customers to replace like-for-like will create valuable, longer term business opportunities. Alternatively, those manufacturers who displace the original equipment manufacturer gain the position of preferred supplier for future supplies of new products.

9. KEY ISSUES FOR PRODUCT SELECTION

- Importance of criteria - % saying criteria is one of three most important

| | |
|---------------------------|-----|
| Health and safety | 70% |
| Initial costs | 49% |
| Durability | 45% |
| Maintenance costs | 38% |
| Environmental issues | 18% |
| Energy efficiency | 18% |
| Support from manufacturer | 16% |
| Other running costs | 13% |
| Tests and certificates | 13% |
| Product guarantees | 8% |

The single most important challenge facing building managers today is the issue of health and safety legislation. With onerous requirements for day-to-day operations, local fines up to £2,000 and even custodial sentences in the Crown Court, the Manager in charge of a facility, who carries personal responsibility for compliance with the laws, is under considerable pressure to ensure compliance. Not surprisingly health and safety is the major issue affecting product choice.

The initial cost of products is still a main criteria in this market. However, the importance of durability and maintenance costs suggest that cost-in-use and performance values are taken into account.

- Improvements required from manufacturers (% stating improvement needed)

| | | |
|----------------------------------|-----------------------------|---|
| Cost-in-use | In-house organisations: 37% | External building management providers: 32% |
| After sales service | In-house organisations: 36% | External building management providers: 18% |
| Environmental information | In-house organisations: 28% | External building management providers: 21% |
| Performance specifications | In-house organisations: 25% | External building management providers: 21% |
| Health and safety information | In-house organisations: 25% | External building management providers: 11% |
| Maintenance | In-house organisations: 24% | External building management providers: 21% |
| Test certificates and guarantees | In-house organisations: 21% | External building management providers: 21% |
| Make or brands | In-house organisations: 14% | External building management providers: 18% |

■ In-house organisations
 External building management providers

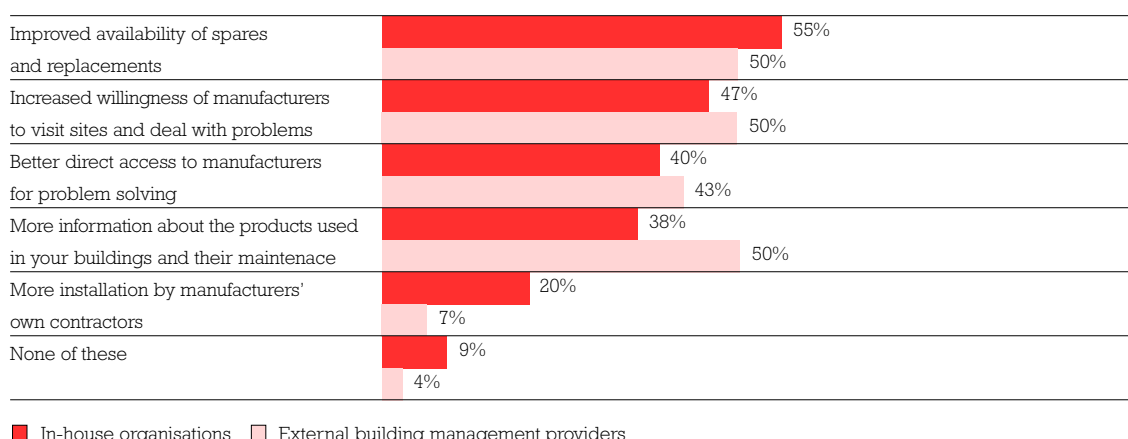
To evaluate products for use or inclusion in approved lists of products or standard specifications, information is required from the manufacturer. Respondents were asked about particular areas of information and the percentages requiring improvements are shown above.

Cost-in-use information and details of the after-sales service and support from manufacturers are areas where in-house organisations are particularly seeking improvements. There is an opportunity to provide comprehensive cost-in-use and after-sales support information data which will promote a long term relationship between manufacturer and product owner. As we have already seen this can be beneficial for the future supply of components, support services and new installations during the building life.

The '95 Barbour Report, "The influence of Clients on product decisions" found that 17% were dissatisfied with after-sales service from manufacturers. The higher levels of dissatisfaction found in the 1998 research shows that any improvements made have not been to the benefit of clients.

External building management service providers also highlight cost-in-use as an area for improvement. However they show higher levels of satisfaction with other features of manufacturers' service, probably as they are not involved with day-to-day use of products.

• Improving the relationship with product manufacturers



Improvements in the availability of spares and replacement parts suggests that respondents would welcome the opportunity to use genuine components from the original product manufacturer where these are readily available.

Greater visibility of manufacturers on customers' sites with problem-solving support, reinforced with better access routes to other problem solving services and information would all be welcomed. All these point to a willingness amongst these decision-makers to establish closer working relationships with the manufacturers of the components within their buildings.

38% of in-house organisations would like more information about the products used in their buildings and their maintenance. The '95 Barbour Report, "The Influence of Clients on Product Decisions" identified that a similar proportion of clients to that found in the '98 study required more information on the maintenance of products in their buildings.

10. CASE STUDIES

For ease of comparison of the approaches taken by different organisation types, four examples of leaders in their field have been set out in the form of case studies. These provide more specific details and highlight similarities and differences.

- Examples of how leading organisations manage their buildings

| | | | | |
|---|---|---|---|---|
| | Leading food retailer | High street banking chain | Pub and restaurant group | Central government department |
| Organisation of property function | Policy set centrally, implemented regionally | Regionally | Regionally | Area offices |
| Title of person interviewed | Development Manager | Principal Architect | Projects and Estates Director | Project Director |
| Number of sites managed by respondent | 900 (=100% of total) | 550 (=20% of total) | 900 (=100% of total) | 145 (=100% of total in area) |
| Budget – maintenance | £10-25m | £2-5m | £5-10m | Over £50m |
| Budget – refurbishment | £25-50m | £5-10m | Over £50m | £10-25m |
| Planned maintenance/refurbishment programmes | Yes | Varies depending on property | Yes | Yes |
| Preparation of performance brief for refurbishment | Respondent | Head Office | Respondent and others in-house | Another in-house |
| Preparation of detailed specification | Another in dept | Respondent and Head Office | External Surveyors and Architects | External Surveyors and Architects |
| % maintenance brand decisions made in-house | 25% | 80% | 80% | 15% |
| % refurbishment brand decisions made in-house | 40% | 95% | 20% | 15% |
| External suppliers involved in brand decisions | National and local general contractors | M&E consultants | FM company for maintenance. Architects/designers for refurb | National and local general and sub-contractors |
| Are standard specifications used? | No | Yes | Yes | Yes |
| Are approved product lists maintained? | No | Yes | Yes | Yes |
| Main product decision criteria | Energy efficiency, other running costs, durability | Maintenance costs, durability, health and safety | Initial costs, running costs, health and safety | Initial costs, maintenance costs, other running costs |
| Considerations becoming more important | Health and safety, environmental issues, QA products | QA products, Year 2000 | Year 2000 | Health and safety, Year 2000 |
| Improving the relationship with manufacturers | Better problem solving, more site visits, more product information, installation by manufacturers' team | Better problem solving, more site visits, installation by manufacturers' team | Better problem solving, more site visits, more product information, installation by manufacturers' team | More site visits for problem solving |
| Future role of outsourcing of building management in organisation | Don't know | Considering | Refused to comment | Considering |

11. EXTERNAL BUILDING MAINTENANCE AND REFURBISHMENT SERVICE PROVIDERS

11.1 Profile of companies

Between 5% and 10% of the leading organisations included in the survey outsource all or a part of their building maintenance and refurbishment to specialist facilities management companies. This figure can be expected to increase as the outsourcing of non-core services grows. The implication is that, if just 5% of the total expenditure on building maintenance and refurbishment of £28 billion is outsourced to FM companies, then this amounts to £1.4 billion, a significant figure.

Although the results of the survey with clients show that these organisations account for a small proportion of the overall total, where they are used, they are very involved in product decisions.

From information gathered during the course of the research, the following companies are amongst the leaders in the industry, with turnovers in building maintenance and refurbishment services typically exceeding £10 million per company:

ABB
Acumen (formerly Mowlem FM)
Amey Facilities Management
Chesterton Facilities and Property Management
Drake and Scull Technical Services
Ferguson, Bucknall, Austin
Gardiner and Theobald Facilities Management
Haden Building Maintenance and Refurbishment
Honeywell FM2
Johnson Controls
Mitie
Opus 4 Integrated
Select Facilities Management
Serco FM
Symonds Group
Taylor Woodrow FM
W S Atkins

These have come into the industry from a range of backgrounds, reflected in the services which they offer. Most also offer non-building maintenance and refurbishment services such as cleaning, waste management, health and safety management, and the provision of security personnel. The above companies appear to offer a complete service covering all aspects of the building, although the maintenance of lifts, escalators and external works are less likely to be included.

As part of the research for this report, 28 companies, including many of the above, were interviewed to provide information of use to manufacturers wishing to identify the value of targeting building maintenance and refurbishment service providers.

Most of the companies interviewed provide refurbishment services in addition to maintenance management.

Clients listed by those interviewed include the Ministry of Defence, the Ministry of Agriculture, Fisheries and Food, Crown Church Commission, the Inland Revenue, Crown Estate, British Airways, Halifax, Railtrack, BT, BBC, Royal Sun Alliance, Legal and General, Land Securities, IBM, BP, Shell, GEC, Gillette.

Most of the larger companies operate from between four and ten offices around the UK, usually in the main cities. Companies have private or public sector focus, with the overall split amongst those interviewed being 70% private, 30% public.

11.2 Building maintenance and refurbishment services provided

- Building maintenance and refurbishment service provided % of organisations (base:28)

| | |
|--|-----|
| Strategic studies of property requirements | 68% |
| Complete management of estates | 86% |
| Planning of maintenance requirements | 89% |
| Implementation of maintenance requirements | 86% |
| Building refurbishment | 82% |

The research shows that the majority of companies providing an outsourced building maintenance and refurbishment service offer a complete management and planning service.

- Building management services provided (maintenance and refurbishment) % of organisations supplying each service

| | |
|--|------|
| Roof and external walls | 100% |
| Windows and external doors | 93% |
| Internal walls, partitions, ceilings | 89% |
| Floor coverings | 93% |
| Fittings eg sanitaryware | 93% |
| Heating, ventilation, air conditioning | 93% |
| Other mechanical systems | 82% |
| Electrical systems | 96% |
| Fire and security systems | 93% |
| External works | 82% |

Services provided cover most of the components of a building.

The actual maintenance work is typically carried out by sub-contractors. Less than 10% of the companies interviewed exclusively use their own labour to maintain all components of a building, and about one-third employ a mix of their own labour and sub-contractors.

11.3 Product decision process

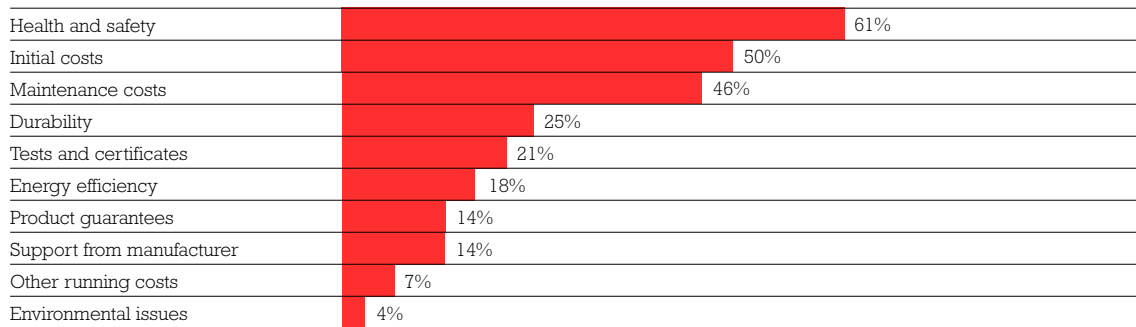
The following points summarise the involvement of specialist building maintenance and refurbishment providers in product choice:

- Around 60% have a strong influence on the products and brands used. A further 30% influence the process but to a lesser extent.
- One-quarter said that clients make the decisions, particularly where mechanical and electrical systems and fire/security are involved. Public sector clients tend to be more influential.
- The sub-contractor may be responsible in up to one-quarter of decisions.
- Brand decisions within these external service providers are usually made at regional office level. In 18% of organisations, decisions are made at head office level.
- Job titles of those involved within external building management companies in making product decisions, include Surveyor, Engineer, Facilities Manager, Project or Contracts Manager, Estates or Property Manager.
- 29% are members of the RICS and 25% of British Institute of Facilities Management.
- Half are aware that their brand choice may be changed occasionally, and typically by a contractor. Similarly they may sometimes suggest a change to a client specified brand, but always seek the approval of the client.
- 57% have standard specifications and 32% have approved product lists. These are most likely to apply to mechanical systems such as lifts and escalators but also include heating, ventilation, air conditioning, electrical systems, fire/security and windows and doors.
- 39% have a policy of using original manufacturers' components.
- 59% are aware of the makes of half or more of the components in their clients' buildings and 11% are aware of all of them.

Where external building management companies are appointed, their level of influence on product use and brand selection is high. They work closely with their clients and sub-contractors in arriving at product decisions.

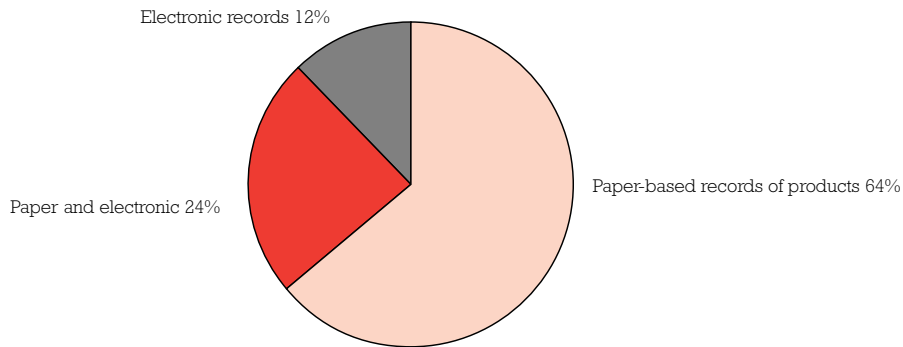
11.4 Product selection criteria

- External building management service providers - importance of criteria (% saying criteria is one of three most important)



The top four criteria when selecting products are the same as those mentioned by in-house organisations, with health and safety at the top of the list.

- Maintenance of product records



A higher proportion are maintaining electronic records than in-house organisations.

40% of those not already doing so expect to hold this information electronically in the next two years. Adding to this those already holding information electronically, then around half will be maintaining information about the products in their clients' buildings in electronic formats in two years' time. This compares with less than one-quarter of in-house organisations expecting to hold product data in this format.

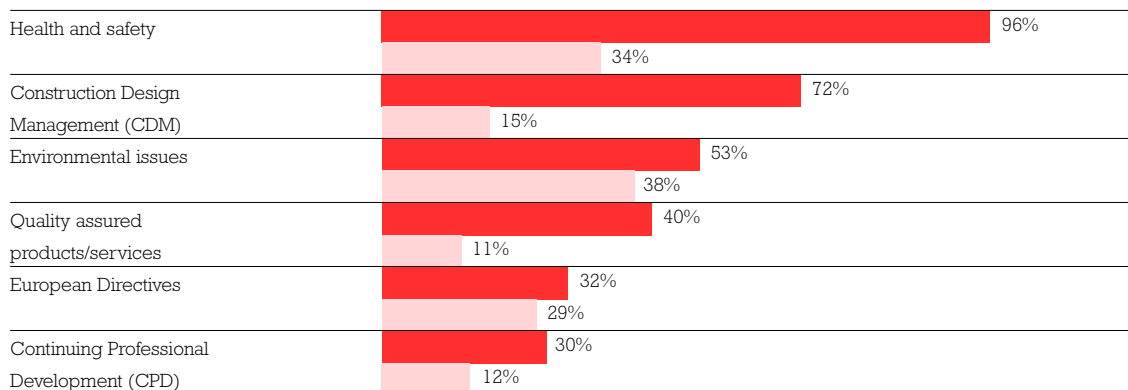
12. IMPORTANT CURRENT ISSUES AND FUTURE TRENDS

There are many issues affecting the management of buildings and it is perhaps one of the areas most frequently affected by recent legislative change. In addition, leading companies are now being forced by shareholders and special interest environmental groups to take account of a range of other issues. The study has identified those issues which are already important and those which are considered to be of increasing importance to those involved in managing buildings.

12.1 Important issues in building maintenance and refurbishment

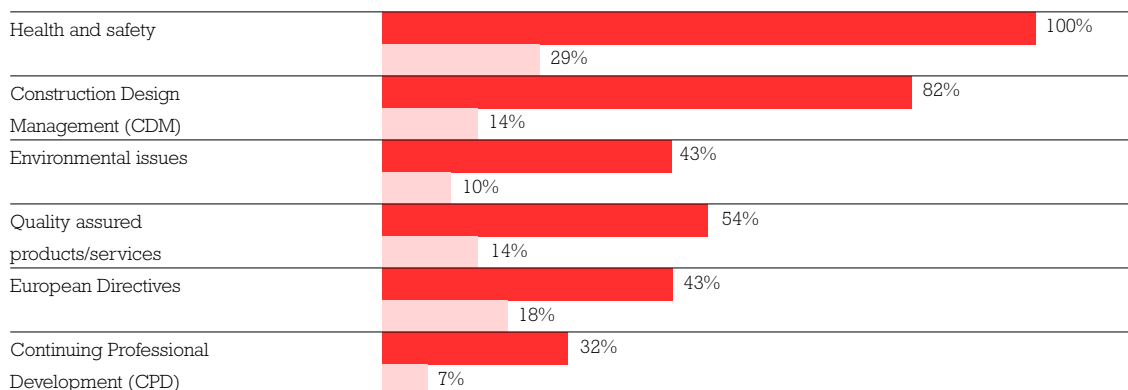
- Respondents' recognition of importance of issues

In-house organisations



■ % very important □ % becoming more important

External building maintenance and refurbishment service providers



■ % very important □ % becoming more important

Health and safety matters are the most important by a notable margin and over one-third of in-house organisations considered that their importance was continuing to grow. The impact of the Construction Design Management (CDM) regulations has clearly been acknowledged, although with only 15% suggesting this is still increasing in importance, perhaps the peak has passed for this issue. It is the environmental issues which respondents believe will receive a much higher profile in the future. Over half of in-house organisations said they were already very important and almost four in ten considered this would grow. This can be expected to translate to an increased demand for environmental statements and information surrounding the materials, manufacturing processes, operation and disposal of most building products.

12.2 Concern about year 2000 date change

The most topical issue in building management is the compliance of building systems and components with the so-called 'Millennium bug'. The popular and trade press are giving considerable coverage to the likely impact that this will have within our everyday environments.

- Organisations concerned about year 2000 issues

| | |
|--|-----|
| ALL | 29% |
| Retail | 34% |
| Financial | 54% |
| Leisure | 27% |
| Developers | 22% |
| Transport/distribution | 13% |
| Utilities/telecommunications | 39% |
| Manufacturing | 24% |
| Other commercial | 27% |
| Local authority housing | 9% |
| Local authority non-housing | 23% |
| Housing associations | 24% |
| NHS trusts | 45% |
| Central government | 48% |
| External building management providers | 50% |

The increasing use of computer based control and management within lighting, heating and air conditioning, security and hazard detection systems means potentially these systems, and many others, are susceptible to failure of time reliant processes to recognise the change of date.

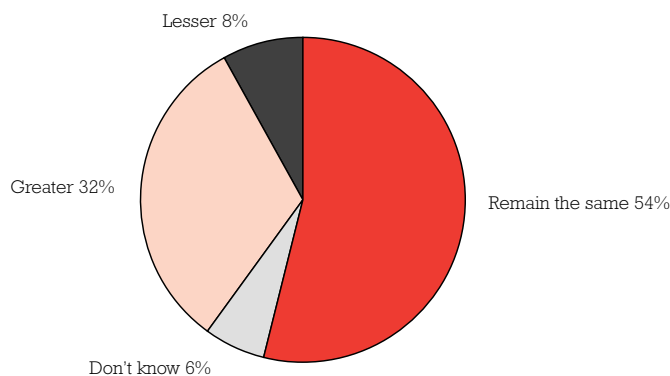
However, the levels of concern amongst respondents does not reflect this. Overall, only 29% said they were particularly concerned about the effect on their building products and systems. When this is segmented by organisation, there are variations in the picture which can be related back to the likely complexity of systems used within these types of organisations and the likely consequences that a failure would have upon their business or function. External building management service providers show high levels of concern, probably because they will be held accountable for any failures by their client organisations.

Levels of concern are so low because it appears that organisations have taken heed of the warnings issued by the government and the IT industry. Three-quarters of all organisations interviewed have defined a strategy to deal with the Year 2000 problem. In addition it appears that they have taken steps to involve suppliers and service providers to ensure that failures are averted. 63% of respondents have had discussions with building systems suppliers about the compliance of their products, and a further 8% plan to do so.

12.3 Trends towards outsourcing building maintenance and refurbishment

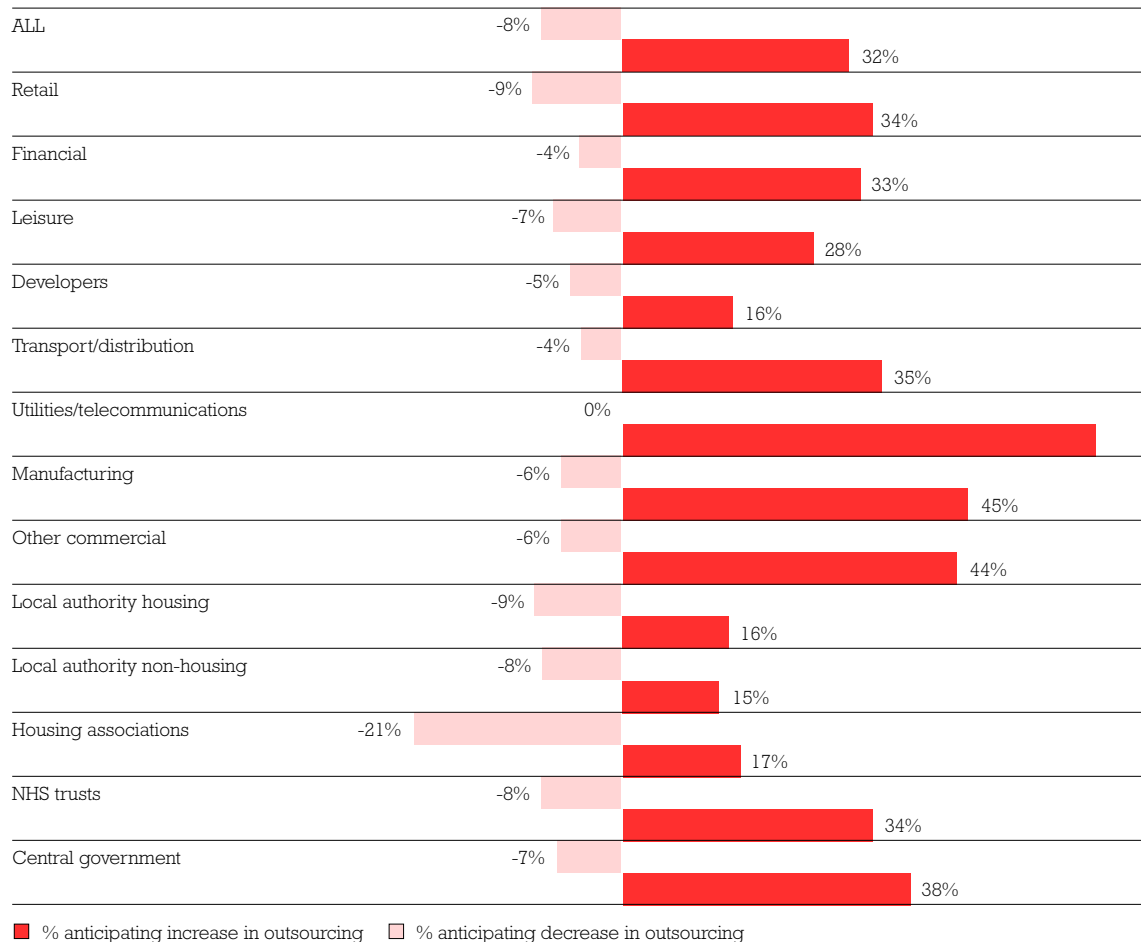
- Do you think that outsourcing will play a greater or lesser role in the management of your buildings?

In-house organisations



The findings show that amongst the leading organisations interviewed from each sector, there are currently small percentages who outsource their building maintenance and refurbishment to an external supplier. To establish the extent to which this will change in the future, respondents were asked if they expect outsourcing to play a greater role in the management and maintenance of buildings. Overall, just under one-third feel that outsourcing will play a greater role whilst only 8% expect it to decrease.

• Future role of outsourcing by type of organisation



Examining this issue by sector, there are higher expectations of an increase amongst private organisations and the NHS trusts. Utilities and telecommunications, manufacturing and other commercial organisations have higher levels expecting outsourcing to become a feature of the future approach to managing their built resources.

External building maintenance and refurbishment service providers are optimistic about their future, with almost nine out of ten anticipating an increase in outsourcing.

13. SPECIALIST PAPERS

FUTURE OF PROPERTY MANAGEMENT

a managing agents perspective

by Simon C. Young, Partner, King Sturge & Co

With any attempt to forecast the future, there is a temptation to extrapolate past trends and to draw on current practices in other parts of the world. However, in a period of rapidly changing investment and occupational requirements, neither approach is likely to provide an insight far into the next millennium! Starting from the perspective of a property managing agent, it is useful to distinguish between the different aspects of fund management, property management and facilities management.

Fund management

Although definitions vary, fund management broadly covers the management of income producing commercial property portfolios for pension funds and other institutional clients upon a discretionary or quasi-discretionary basis. The fund manager will normally evolve and implement the investment strategy, exercise control over stock selection, determine the sectorial and regional balance of the portfolio and decide the timing of acquisitions and disposals. The fund manager will be judged on the ability to generate above average total returns on a 3 or 5 year rolling basis.

This area of work is already under threat as a number of (particularly smaller) pension funds are decreasing their exposure to, or withdrawing from, direct property investment and are often gaining exposure to the property market by buying company shares or through indirect vehicles such as property unit trusts. With fund management instructions being re-tendered more frequently, it is possible to see this specialist work becoming increasingly concentrated in the hands of the larger Chartered Surveying practices, or specialist property fund managers, with an established track record supported by a combination of excellent in-house research facilities and an in-depth market knowledge. While the relatively imperfect and opaque nature of the commercial property market makes it possible to achieve significant out performance by a combination of careful stock selection, active management and astute timing of acquisitions and disposals, direct property is perceived to be inflexible and is often only available in indigestibly large lot sizes. The recent increase in stamp duty on larger property purchases from 2% to 3% has increased acquisition costs from about 3.75% to 4.75% of the purchase price.

Over the next few years it seems likely that the Government will allow the establishment of tax neutral property vehicles in the market, closely modeled on the successful US real estate investment trusts (REIT), to provide greater liquidity.

Property management

One of the dominant trends over the last two or three years has been a tendency for institutions and property companies to outsource the day to day management of their property portfolios, leaving their in-house teams free to concentrate on portfolio strategy. Again the major firms of Chartered Surveyors, offering both economies of scale and a national office network, are most likely to benefit from this trend. Property owners are, quite reasonably, expecting to work increasingly closely with their managing agents in order to maximise the returns from their assets. Detailed and more frequent reports are required, particularly on the management accounting side where many clients expect electronic access to the database relating to their properties. In addition to checking that tenants are complying with their repairing and other lease covenants, managing agents are also expected to ensure that the properties comply with an ever widening range of UK and EU Health & Safety legislation. Much time and energy is currently being expended to ensure that all our properties under management, and their building management systems, are Year 2000 compliant.

The leases of most buildings let to a single tenant require the tenant to keep the building in full repair and decoration which is a potentially onerous obligation that can extend to requiring the tenant to replace parts of the original building or the plant and machinery. Frequent property inspections by the managing agent will establish whether these obligations are being fulfilled and, if necessary, pressure can be brought to bear by serving an interim schedule of dilapidations specifying the works that need doing. If a tenant subsequently fails to comply, most institutional leases reserve the right for the landlord

to either forfeit the lease or enter and carry out the works at the cost of the tenant. Thus a planned and properly managed maintenance programme can prevent problems and save cost.

Where freeholders are responsible for providing services to tenants within multi-let buildings, increasing emphasis is being placed on maintaining consistently high levels of service at a competitive cost, with the tenants often benefiting from the purchasing power of major property owners. Although sinking funds to allow for major items of capital expenditure, which have always been unpopular with tenants, are likely to continue to become less common, the use of planned preventative maintenance programmes can ensure that costs are budgeted for and, where appropriate, spread over more than one service charge year. Landlord's managing agents are, in any event, coming under increasing pressure to demonstrate that all maintenance contracts are closely monitored, and retendered on a frequent basis, to ensure an appropriate standard of service. As more and more organisations benchmark operating costs, this pressure is likely to intensify although there will always be a delicate balance between the quality of service required and the associated cost.

Although tenant demand is strong in the current buoyant market, well managed buildings are likely to retain their competitive advantage in attracting and retaining tenants. Over the recent past developers of business parks in the UK have begun to offer a wider range of services to their tenants including, for example, the supply of energy and the provision of nursery facilities and this trend is likely to continue.

Facilities management

The primary function of facilities management is the management of sites and buildings for the benefit of the users, whether freehold owner occupiers or leasehold tenants. This area of business has grown rapidly over the last few years, partly as a result of companies deciding to outsource this non-core function and partly due to a growing awareness of the need to meet rapidly changing occupational requirements cost effectively. In particular, the need for greater flexibility of space for users is likely to result in the continued growth of the serviced office sector.

It is possible to envisage that, over time, standards of repair and maintenance will gradually become more closely linked to the requirements of the occupier rather than being largely prescribed, as at present, by the requirements of institutional developers and owners.

Summary

The most significant change to impact on the role of the property managing agent over the next few years is likely to be a gradual move away from a direct property investment, with increased liquidity being provided to the commercial property market by the evolution of new tax neutral indirect vehicles. Many of these funds are likely to specialise in particular sectors or regions of the market enabling investors to change their exposure to commercial property more easily as market conditions change. However, irrespective of the nature of the new investment vehicles, there will be a continuing role for specialist managing agents able to maximise total returns from properties by exercising tight credit control and through active property management.

As the property market becomes more sophisticated, it is possible to envisage the gradual convergence of the needs of institutional landlords and their tenants, with greater co-operation between the two to achieve their respective goals.

BUILDINGS FOR CUSTOMERS

a building surveyors view

by Trevor Mole BSc (Hons) FRICS, Partner, Property Tectonics, Building Surveyors Divisional President

'Change is the law of life'. 'Those who look only to the past or present are certain to miss the future' said John F Kennedy. This statement has probably never meant so much to the world of construction and property as it does today. Construction and property are deliberately combined, as the notion that these two great industries can be considered separately does not reflect the future. This is because the new emphasis is on the 'customer' who takes benefit from buildings in which both construction and property trade. Therefore, product design and procurement are inextricably linked with product performance and use. In this context, a customer may need some definition. Historically, Developer, Building Owner and Tenant could well have had quite different objectives and therefore different needs to be satisfied. Perhaps it is emphasis on these differences that has produced many buildings incapable of delivering the right performance and quality for the customers at the end of the chain, the people who use them.

The construction procurement industry has not enjoyed a good reputation and governments have intervened to correct what has been seen by many as a very inefficient and uneconomic business. Sir Michael Latham's report 'Constructing the Team' highlighted ways of overcoming some of the problems of an industry considered too old fashioned, too adversarial and too fragmented. The Scheme for Construction Contracts and Part II of the Housing Grants Construction and Regeneration Act 1996 which came into effect on 1 May, is designed, amongst other things, to help avoid unnecessary, time consuming and costly disputes in construction. More recently the Deputy Prime Minister's task force, under the leadership of Sir John Egan, has been looking to encourage 'leaner' construction with the added benefits of cutting costs, time, defects and accidents.

Events over the last few years have, on the whole, been demand/"user side" led. For example, Mr Prescott's team consists mainly of customer/client/employer representatives. It is about getting the supply side to deliver more of what the customers, who require buildings, really want. However, whilst this is 'demand side' led the spirit at the top has been one of partnership and co-operation. The Construction Industry Board (CIB) has been a very significant player in bringing the supply side and user side together. The CIB's Construction Clients' Forum and Construction Round Table which represents major client/user organisations have subscribed to a pact with the industry to 'Fully meet the needs and expectations of clients'.

An important dimension in what is happening now, and one which is not readily appreciated by the blinkered in the construction sector, is the emphasis on the building life cycle. Those providing buildings must now embrace the total package, the whole life concept from inception to demolition. It is about product performance as well as product delivery and the underlying attributes of quality, time and cost in procurement have to be weighed against the same attributes in use. It is the building/property life cycle which is becoming more and more important as the demand side brings more of its influence to bear. In this context, it is the property sector which is beginning to drive the whole process and the supply end will be expected to deliver better value for their customers than ever before.

Chartered Building Surveyors have specialised in property care, maintenance improvement and rehabilitation for some twenty-five years. Even they could not have imagined, as little as ten years ago, that so much emphasis would now be placed on the need for their skill base. Events in the construction sector demand that attention to performance be given in design and procurement at the earliest stages of the process. Designers who have traditionally seen building designs as fixed and finished at occupation must now consider the future much more seriously by providing inherent design flexibility to allow buildings to evolve. Or, as author Stuart Brand puts it so well, to provide 'buildings that learn' - a concept which Chartered Building Surveyors have always embraced as they have sought to extract greater performance from existing buildings.

The performance dimension in design is further emphasised by the need for healthier and more environmentally friendly building; buildings which consume less energy in construction and in use and which provide a sustainable resource well into the future. Buildings which provide the right environment for people of all ages and with a range of physical attributes, including the 6.2 million disabled people in Britain. They must be accessible for all as the Disability Discrimination Act 1995 requires.

This philosophy also needs to be translated in many other ways throughout a building to ensure that the environment is non-handicapping.

The effects of globalization, the information technology revolution and changing methods of working are shaking the industry to the core. Everyone in the business has to deliver world class standards and a customer focused service if they are to survive. There has to be real care for customers, a real understanding of their needs and businesses, and a real willingness to share their risks and problems. The industry has to take down the walls between various functions and interests, dismantle old ideas and notions which have been too adversarial, too old fashioned and just simply inefficient.

Existing buildings consume over half the construction industry output. More than 40% is in pure repair and maintenance. This represents approximately £22 billion being spent per annum. The existing building market has got to deliver more to its customers. User expectations are increasing and demand for quality environments is uncompromising even in older existing property. Customer expectations for new buildings are also generally required from the existing stock, placing greater demand on property and construction professionals to deliver appropriate expertise in this specialist area of the market.

The debate over the economics and benefits of renewal versus rehabilitation will no doubt continue. Pressures to keep and conserve buildings and extract greater performance will more than likely continue to increase alongside the need to maintain buildings to acceptable standards. However, there is resistance in the market to full scale refurbishment as the Connaught Report, produced for the RICS on the Office Sector identifies. The report points to the high volume of office space that will not meet modern requirements by the end of millennium. Whilst the merits of refurbishment are well recognised there is a need for government encouragement through tax incentives. Owners and Landlords also need to be convinced and informed of the added value and potential returns associated with major refurbishment.

The effects of changes in the way local and central government and large corporate businesses now operate, places' greater emphasis on the need to deliver facilities to acceptable and agreed standards. The influence of the Private Finance Initiative, joint private and public funding of projects and the out-sourcing of non core business activities (such as property) emphasises the need for risk sharing. Businesses and institutions want the benefit of using property without the burden of having to manage it.

Against this backdrop of change, property care has become very important and quite sophisticated. The need to understand how individual buildings and their constituent parts perform is fundamental if accurate costs and maintenance strategies are to be produced. Information flow from the design and construction phase has improved. The Construction Design and Management (CDM) Regulations have encouraged this. Under the regulations it is necessary to provide important information on the health and safety risks associated with managing particular buildings or parts of them. However, buildings continue to be managed using the bare minimum amount of information needed to ensure adequate performance. The impact of IT in property management has been relatively slow and only now is beginning to make a significant contribution.

There appears still to be resistance to planning and organising maintenance and property care properly. Some providers of facilities are not assessing maintenance and repair needs adequately and time will eventually lead to a deficit of backlog maintenance and severe under funding. Sensible building owners and users are modelling their future building maintenance requirements to produce accurate annual and long term budgets so that property care and maintenance and expenditure can be managed sensibly. To do this well, detailed analysis has to be carried out on the building attributes; building owner and user objectives and requirements; and external influences such as economic, political and social influences including statutory and legal requirements. The analysis needs to anticipate present and future requirements including reliable data on future costs and life expectancies of building components.

Unplanned, ad hoc maintenance is expensive and if building maintenance is totally reactive, failures occur, affecting those who use the building. It would be interesting to know how much of the £22 billion spent on repairs and maintenance each year is handled on an ad hoc basis and how much could be saved through good planned management? It is also worth noting that despite this spend there is still today a high backlog of disrepair in almost every sector of the property market.

What all this means for providers of goods and services to the construction and property markets is that they must put the customer at the centre. Each provider must have a clear understanding of their

customers and how they can satisfy their needs. Every product and service has to be of the right quality, delivered on time and at the right cost. The mood in the industry is one of co-operation and team working to ensure that the process and the various supply chains are managed properly. The individual strengths, expertise and knowledge of all those involved must be brought together effectively without unhealthy tensions and adversarial positioning.

Boundaries are blurring between the professions and professionals and between consultants and contractors. It is ultimately about satisfying customer needs and it is this which is now driving the process rather than convention and traditional ways of working. The real winners in the business will be those who can provide added value and who can provide the extra, the innovative and the exciting.

Construction and Property are a people business and good people are needed at every level. People who can bring enthusiasm and passion for the customer and who are prepared to listen to what they desire and deliver a consistently high level of service.

Communication and information are fundamental and provide the flux for future development and change. Too much information available today misses the target by concentrating exclusively on product specification, whether goods or services, rather than addressing the specific needs they satisfy. Undoubtedly all sorts of interesting and exciting ways of presenting information exists providing greater visualisation and understanding. Everyone must ensure that this information is unravelled so that customers can more fully understand the industry which seeks to satisfy their property needs and thereby help develop real partnering in the future.

MILLENNIUM BUG - THE ULTIMATE DEADLINE

will the Y2K problem bring building systems to a halt?

by John Auckland, Consultant, Premises & Facilities Management magazine

Picture the scene. You arrive at work still slightly the worse for wear on 2 Jan 00. Swipe your entry card... nothing. You take a good look through the glass door inside the building. The lights aren't on and the floor looks suspiciously wet. If and when you do get past the door, the lifts don't work, the fire alarm and sprinkler systems are up the shoot, and the place is freezing because the air conditioning system thinks its summer.

This dismal picture was painted by J Trevor & Webster Facilities Management. Scaremongering? Not if the steady stream of press announcements from manufacturers and suppliers of building systems is anything to go by.

While most businesses are now aware their computer systems may be at risk around the year 2000, what is less well understood is that building services could also fail. The millennium bug can infect lighting and lift controls, building management systems, access, security and CCTV hardware, car parking, utility metering, power generation controls - and even that indispensable icon of the modern work environment without which nothing else happens - the vending machine. The key word here, by the way is 'may'. As we will discover the millennium bug is capable of diagnosis and it should be straightforward to eradicate.

The root cause of this is that in today's highly serviced buildings, microprocessors are literally everywhere, embedded in control and monitoring devices around plant rooms, in control panels and cupboards, below floors and above ceilings. There could easily be several thousand embedded chips in one building, and those performing time, logging or date functions are most at risk.

Dissecting the bug

Time is maintained in a computer system by an internal Real Time Clock (RTC) that operates even when the machine is turned off. RTCs are similarly employed in many (but not all) distributed control and monitoring devices. Most RTCs use a US programming convention of storing dates in 'MMDDYY' form. Note that only two digits represent the year, which was originally to reduce the amount of space data would consume.

After 123199 (31 Dec 99) RTCs will roll over to 010100. This is fine until a program tries to perform calculations using these dates. It may then generate a negative or imaginary number, possibly causing it to freeze or work erratically. The same problem could occur a year later when the computer tries to move from 123100 to 010101. To cap it all, the year 2000 is a leap year, so this is a year calendar as well as a time clock issue.

Back to the PC. The bridge between a computer's hardware and software is its Basic Input and Output System (BIOS).

Various BIOS versions exist and there is no real 'standard' as such. Some BIOS versions do not allow dates after (19)99 and will revert to 4 Jan 80 on the first day of the new millennium. Such machines are at the heart of numerous building supervisory control and data acquisition (SCADA) systems.

Even where RTCs and BOIS versions are year 2000 ready, problems will still occur if the computer Operating System (OS) or the software applications running within them are not. For example, MS-DOS version 6.2 onwards and MS-Windows are year 2000 compliant, to work reliably, the RTC, BIOS and all applications software should also be complaint - from spreadsheet to fax software to that freeware utility you found on a magazine cover last week.

De-bugging

Putting this in the context of a building system, there are three elements that need to be evaluated - your supervisors (usually standalone PCs or displays on a server), communications networks (including all nodes and gateways), and field devices (eg controllers or outstations). Across all of these is the system software, sometimes called 'firmware', that binds these elements into a cohesive system.

Not all building system functions will be affected by the millennium bug. Moving from 1999 to 2000 won't alter the way a building management system modulates a heating valve. However, logging, reporting, tuning, optimum start/stop and fault reporting could all be affected. The way an access card reader works won't suddenly change in two years time, but the ability of a security system to record events and announce alarms might. If you are trying to display a graph of room temperatures on your PC, it may simply not know what to do with the data.

Systems that have been in operation since the '60s or 70s may present less of a problem than those installed more recently, because of the limited amount of technology they contain.

Compliance

There have been very few factual announcements from manufacturers of building management systems and environmental controls about year 2000 compliance. P&FM magazine contacted several to gauge the present state of play.

Johnson Controls receives letters from users every day seeking clarification on compliance issues. UK Development Director, Richard Cook, says a simple answer is not possible. 'A building management system contains many components and we need to check the compliance of each. Our maintenance engineers are routinely checking BIOS versions as they go round'.

According to Cook, 'users without service contracts have the biggest problem: 'unless they come forward we don't necessarily know they exist'. A view reiterated by Colin Henry, Commercial Engineering Director at Landis and Staefa, who says they are 'inundated' with letters and questionnaires. Landis and Staefa commenced checks on all their systems, controllers, interfaces and management supervisors in 1996 and will be offering upgrades where necessary through local outlets as part of the maintenance package.

Chris Monson of Caradon Trend says the company has been unable to identify malfunctions with any of the six real time clocks used in the Trend product's history. Trend has also tested its supervisors and displays, along with parts of other software packages that are used with the system. There are, though, 'a few labelling and functional problems' that should be resolved as soon as possible which will involve upgrading the supervisor software.

Systems Integrator E-Squared which launched an audit service earlier this year, feels some manufacturers have left things rather late, given this problem was known at least three years ago. If this spot survey is representative, serious efforts are now being made by most building system manufacturers to deal with the millennium bug.

However be warned!

Even when a technology is confirmed to be year 2000 compliant, all associated applications and hardware also need to be fully compliant. Some systems port data automatically to facilities management packages, such as planned maintenance programs. Others share data between sites, or send data to a printer, a remote server, or even to a bureau facility. Literally every element in the chain has to be considered.

You may by now feel slightly aggrieved that a system installed perhaps as recently as three or four years ago, with an anticipated life span of say 10 or 15 years, might need re-engineering, or worse replacement, because it can't handle a simple date change.

The British Standards Institution has issued guidance notes defining year 2000 conformity requirements (Public document 2000-1). This sets out the criteria system manufacturers and suppliers are advised to adopt when evaluating their systems. If not a breathtaking read for facilities managers, it will certainly be helpful at a contractual level when seeking clarification from system manufacturers and when procuring new systems or hardware.

Multi-ownership

The chances are that the building systems in your premises have all been installed by different vendors. In addition, some systems could have been provided by, and might belong to, more than one company: For example where part of a BMS is owned by the landlord and part by the tenant. Depending on how the system was procured, the installer or manufacturer may also have some onus of responsibility for sorting out non-compliant equipment. Additionally, maintenance contracts should be checked to see what they cover.

Eradicating the millennium bug could involve a combination of three main measures:

- upgrading software
- replacing microprocessors in distributed devices
- replacing control equipment if an upgrade is impossible

Dirty fix

A so called 'dirty fix' also exists in the office systems world. The calendar repeats itself every 28 years and some companies are trying to overcome the year 2000 problem by winding their clocks back to 1941. IT company Commslogic warns against this approach. It requires patching software at the front end of the system because all of the dates deep inside the system will be wrong.

Needless to say if your building systems are integrated with a 'dirty' office system, this solution would be a recipe for disaster.

One of the problems in managing this issue is that it is extremely difficult to know how a building will actually be affected or the cost of rectification, without making detailed checks. Rule of thumb just isn't good enough. The most pragmatic approach according to the Building Services Research and Information Association (BSRIA), is to audit what control equipment is installed and to approach the respective suppliers to determine if it is millennium compliant.

However, several manufacturers have indicated to us that it is no good simply asking bald questions. What they may require is a schedule of installed hardware with dates and ideally, serial and software version numbers. This information usually forms part of the system's site documentation, but lets be realistic - five or 10 years down the line, the manual might be propping up a planter somewhere. In the end you may need to pay a specialist to compile a schedule for you - either the manufacturer, a maintenance provider, or a systems integrator. Some companies are now providing audit services for IT and building systems.

Counting the cost

By now it should be clear that eradicating the millennium bug could potentially carry a high price tag - not just because of the direct costs of calling in specialists and suppliers, but also because of legal costs and opportunity cost in terms of your staff and resources.

Having audited your systems an appropriate management strategy could be developed - for example, a rolling programme and budget in which systems that are critical to business continuity are identified and tackled first.

Prioritising remedial work could be a vital key. While organisations may be able to survive without a vending machine, they certainly will not be able to cope without systems that heat, ventilate and secure buildings.

Where to find help

Year 2000 audit services

- CBX, FM consultants, 01628 643622
- Commslogic, IT services 01252 776776
- E-Squared, Systems integrators 0171 378 0101
- J Trevor & Webster, FM consultants 0141 204 0771

Useful contacts

- The UK Year 2000 Interest Group. A non-profit making organisation that shares information between organisation undertaking Year 2000 projects: 0181 977 6915
- Energy Systems Trade Association (ESTA) 01793 763556

Publications

- DISC PD2000-1 A definition of year 2000 conformity requirements; free
- DISC PD2000-2 A code of practice for year 2000 management £14.95
Both available from the Building Services Research and Information Association 01344 426511
- The year 2000. A practical guide for professionals and business managers £7.50
British Computer Society 0171 562 7650
- Taskforce 2000 Department of Trade & Industry 0171 562 7650
- Tackling the Year 2000 £320 or £440 on CD-Rom
Central & Telecommunications Agency (CCTA) 0800 146020

Information sources on the Internet

- BSRIA: www.brainstorm.co.uk/reg/DISC
- CCTA: www.open.gov.uk/ccta/mill/y2000.htm
- IEE: www.iee.org.uk/2000risk/

14. GLOSSARY OF TERMS

- **Maintenance:** The process of upkeep of a building fabric, fixtures and fittings carried out day-to-day. This includes servicing, decoration and the replacement of consumable items. Minor repairs to work components and the replacement of failed equipment falls within maintenance.
- **Refurbishment:** The replacement and upgrading of materials and systems to extend the life, improve facilities or change the use of an existing building. Major refurbishment may involve removal of external claddings and roof coverings in addition to new complete internal fit-outs. At the other end of the scale, minor refurbishment works may involve changing partition layouts or installing new air conditioning systems.
- **Performance brief:** A statement of the required standard of performance which a building system, component or product must achieve. It will typically include references to applicable legislation, independent testing and codes of practice where these are available or applicable. This brief will describe generic material types to be used but will not include reference specific manufacturers or brands of products.
- **Detailed specification:** A performance brief with additional detail covering specific performance, product criteria such as dimensions and finish, and in some cases, the individual manufacturers and brand names of the products to be used.
- **Standard specification:** A standard clause which describes the performance criteria for a specific system, component or product designed for repeated use in standardised applications. It can state performance criteria only or be highly detailed and specific to a particular product. It may be designed to integrate with specification tools such as the National Building Specification (NBS).
- **Approved list of products:** A list of products deemed suitable for use within multiple projects. These can be assembled by any product decision maker, a designer, contractor, or client, and will be consulted within future decision-making processes. It may include single or multiple references for each component with an inferred requirement for products on the list to be used in favour or any others available.
- **External Designers:** Design service providers who are not directly employed within the Client's organisation. These may include Architects, Interior Designers, Design and Building Contractors and Building Surveyors.
- **General contractors:** Contractors providing a total construction service at a national or local level. They may have some, but not all trades employed internally and will supplement these by acquiring and managing the services of more specialised sub-contractors to deliver a complete service directly to the Client.
- **Sub-contractors:** Contractors who offer a particular service which forms part of the general building process. These will typically be specialists in their particular fields with the necessary experience, skills and relationships with manufacturers of products used. They can deliver their service through a general contractor or directly to a Client. Where specialisation is particularly unique, they are likely to operate on a national basis, for more general skills they will be concentrated upon local markets.
- **Building Management service providers:** An organisation providing a service which takes full control and responsibility for the maintenance and/or refurbishment of buildings on behalf of the owner or tenant. They will not necessarily carry out the works but may acquire and manage the services of contractors.
- **Specialist refurbishment companies:** A provider of a service for refurbishment of the whole or part of a building. The service may include design, management and construction activities in any combination with other inputs acquired from sub-contractors and managed on behalf of the client. The key difference with a general contractor is the focus upon refurbishment and avoidance of new build works within their service.
- **In-house organisations:** The ultimate Clients. Those responsible for the processes of maintenance and refurbishment of the buildings owned or occupied by their organisation.
- **Direct labour organisations:** The employment of skills and resources, particularly within Local Authorities, for building works without the involvement of a general contract. Services will often be on a labour only basis with materials being supplied direct by the Client.
- **Building stock:** The sum of all existing buildings, of all forms of construction and all uses, held nationally. Often segmented by commercial, industrial and residential uses within the public and private sectors.
- **Property tenure, freehold and leasehold:** Tenure describes the manner by which a building is owned and occupied. Where owner and occupant are the same, the tenure would be 'freehold'. If the property is owned by a party, other than the occupant this will be arranged under the terms of a lease and hence known as 'leasehold'.

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