

RICS Practice Standards, UK

Building maintenance: strategy, planning and procurement

Guidance Note - 2nd edition



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Building maintenance: strategy, planning and procurement

RICS guidance note

2nd edition



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RICS guidance notes

This is a guidance note. It provides advice to members of RICS on aspects of the profession. Where procedures are recommended for specific professional tasks, these are intended to embody 'best practice', that is, procedures which in the opinion of RICS meet a high standard of professional competence.

Members are not required to follow the advice and recommendations contained in the guidance note. They should, however, note the following points.

When an allegation of professional negligence is made against a surveyor, the court is likely to take account of the contents of any relevant guidance notes published by RICS in deciding whether or not the surveyor has acted with reasonable competence.

In the opinion of RICS, a member conforming to the practices recommended in this guidance note should have at least a partial defence to an allegation of negligence by virtue of having followed those practices. However, members have the responsibility of deciding when it is appropriate to follow the guidance. If it is followed in an inappropriate case, the member will not be exonerated merely because the recommendations were found in an RICS guidance note.

On the other hand, it does not follow that a member will be adjudged negligent if he or she has not followed the practices recommended in this guidance note. It is for each individual chartered surveyor to decide on the appropriate procedure to follow in any professional task. However, where members depart from the good practice recommended in this guidance note, they should do so only for good reason. In the event of litigation, the court may require them to explain why they decided not to adopt the recommended practice.

In addition, guidance notes are relevant to professional competence in that each surveyor should be up to date and should have informed him or herself of guidance notes within a reasonable time of their promulgation.

Introduction

Building maintenance has for many years been regarded as the ‘Cinderella’ of the building industry, with little attention paid to innovation and ‘free thinking’ in the delivery of its service. However, it should be pointed out that building maintenance is not only key to sustaining the built environment, but its value in terms of employment and expenditure in the economy is also significant.

In monetary terms, it is estimated by RICS Building Cost Information Service (BCIS), that the total expenditure on maintenance in 2006 was over £70bn (5.4 per cent of Gross Domestic Product (GDP)). Recent years have seen a significant turnaround in the total workload for the new build sector as more and more clients become aware of the need to consider the whole life cost of a building rather than simply the initial capital expenditure. This has resulted in maintenance being seen as an area of work with a consistent, if not major, workload. The major contractors have set up not only small works divisions, but also separate maintenance companies to provide a quality service to one-off clients and major property owners with their continuing need for regular day-to-day repairs. Facilities maintenance companies are also increasingly seeing maintenance as the ‘core’ component of their service provision.

The influence of the European Union with the Public Procurement directives (Closed Competitive Tendering (CCT) and outsourcing) has meant that large portfolios of public property have become available to private sector contractors in place of the previous public works departments. Industry’s response has been to offer new and exciting ways of procuring maintenance works.

This guidance note deals with the strategic and procedural matters that need to be considered when carrying out such building maintenance works.

Part 1 addresses the need for, and formulation of, a maintenance strategy and a maintenance policy. For some property owners a maintenance policy will have evolved over a long period of time and may, unfortunately, be cast in stone without ever considering the corporate strategy, which the maintenance service is designed to support and facilitate. For others, despite a long history of procuring maintenance works, they may never have set down in writing precisely what they require from these works. In order for building maintenance to be effective, these fundamental issues need to be addressed.

Part 2 looks in more detail at the works, addressing issues relating to the identification and prioritising of current and uncompleted maintenance work of an individual property, or a portfolio of properties.

Part 3 considers the different methods of funding maintenance works. Traditionally maintenance has been funded out of revenue with budgets cut or expanded to suit the level of the revenue available, i.e. a budget-led philosophy. Changes are, however, being seen in the approach of property owners to funding, with new methods being employed to ensure the right repair at the right time, with the cost deferred over a number of years to maximise the total

cost benefit. In other instances property owners require a certainty of cost for a full year's property care and look to the contractor to take the financial risk of maintenance.

Part 4 deals with procurement, the selection of the contractor and the form of contract to be used. The wide variety of comparatively small value works that can occur means that the choice of the right contractor for the project is extremely important. Similarly, the correct contract must be chosen to ensure that both the employer and the contractor can perform their respective roles without being constrained and to ensure the end product represents value for money.

New legislation

There is now new legislation to consider that will influence the way an organisation shoulders its responsibilities at a corporate level, namely the introduction of the *Corporate Manslaughter and Corporate Homicide Act 2007* (implemented on 6 April 2008), and the *Health and Safety (Offences) Act 2008* (received Royal Assent on 16 October 2008).

Corporate Manslaughter and Corporate Homicide Act 2007

The term 'manslaughter' covers cases in England, Wales and Northern Ireland while 'homicide' is applicable in Scotland.

The Act will impact on many aspects of a maintenance service, and the condition of buildings and facilities as a result of maintenance, or indeed the lack of maintenance (where the service fails with fatal results) and the more significant implications are outlined here. The Act introduces a new offence across the UK facilitating the prosecution of companies and organisations where there has been a gross failing throughout the organisation in the management of health and safety, which manifests itself with fatal results.

The Act does not require organisations to comply with any new regulatory standards, but ensures that they are taking proper steps to meet current legal duties by creating an 'explicit link' with existing requirements under health and safety law. These 'requirements' already exist in the civil law of negligence, but the new Act addresses the key defect in the existing law that meant that organisations could only be convicted of manslaughter if a 'directing mind' at the top of the organisation was also personally liable – the 'identification principle'.

The new Act will prompt organisations to think again about how risks are managed, and so satisfy themselves that their systems and processes for managing health and safety are in place and are adequate.

Some points clarified for the Act:

- Individuals (including directors and senior managers) cannot be prosecuted under the Act, it is the organisation that is in the dock facing 'corporate liability'. (Individuals can already be prosecuted for gross negligence and health and safety offences where sufficient evidence against the individual exists.)
- A 'parent company' cannot be convicted for failures within a subsidiary, all companies within a group structure are deemed to be 'separate legal entities'.

- The new offence applies to all companies and employing partnerships including those in a contracting chain (subcontractors).
- Under the new Act, the only ‘relevant duty of care’ will be the duty of care owed in the law of negligence.
- The threshold for the offence is ‘gross negligence’, meaning that the way activities were managed or organised ‘must have fallen far below what could reasonably have been expected’.
- The failure to manage or organise activities properly must have ‘caused’ the victim’s death. Having said that, it is not necessary for the management failure to have been the ‘sole’ cause of death, the prosecution will however need to show that ‘but for’ the management failure (including the substantial element attributable to senior management), the death would not have occurred.
- The Act applies across the UK; on UK territorial waters; on a British ship, aircraft, or hovercraft; on an oil rig or other offshore installation already covered by UK criminal law.
- The new offence only applies where the harm that leads to death occurs within one of the places mentioned above.
- The ‘harm resulting in death’ does not need to be ‘physical injury that is fatal’ but also includes situations where death occurred some time after an injury or harm takes place.

The penalties can include unlimited fines; the imposition of a publicity order; remedial orders; and in addition, individuals in England, Wales, and Northern Ireland can bring a private prosecution for the new offence.

The Act itself, and guidance on the Act, are available online from the links below. The Act can be obtained from the Office of Public Sector Information at: http://www.opsi.gov.uk/acts/acts2007/ukpga_20070019_en_1

Guidance documents *Understanding the Corporate Manslaughter and Corporate Homicide Act 2007* and *A guide to the Corporate Manslaughter and Corporate Homicide Act 2007* can be obtained from the Ministry of Justice at:

<http://www.justice.gov.uk/docs/manslaughterhomicideact07.pdf>

and

<http://www.justice.gov.uk/docs/guidetomanslaughterhomicide07.pdf>

These documents provide more comprehensive information on the Act and outline the ‘tests’ that will be applied by the courts once a case comes before them. Later this year, new guidance entitled *Leading health and safety: Leadership Actions for Directors and Board Members* will be issued jointly by the Health and Safety Commission and the Institute of Directors.

Health and Safety (Offences) Act 2008

The prime purpose of this new Act is to raise the maximum penalties available to the courts in respect of certain health and safety offences by altering the penalty framework set out in section 33 of the *Health and Safety at Work etc. Act 1974* (it also makes similar provision for the *Health and Safety at Work (Northern Ireland) Order 1978*).

The objectives behind the changes are two-fold. Firstly, to ensure that sentences for health and safety offences are sufficient to deter those tempted to break the

law, and secondly, that they are sufficient to deal appropriately with those who do commit offences. The effect of the Act is to:

- Raise the maximum fine which may be imposed in the lower courts to £20,000 for most health and safety offences (the power to impose a fine of up to £20,000 is already available in respect of some offences under the 1974 Act such as breaches of the general duties arising under sections 2 to 6. This new Act extends this power to other offences that are considered to be comparable, for example, a breach of regulations made under the 1974 Act).
- Make imprisonment an option for more health and safety offences in both the lower and higher courts.
- Make certain offences, which are currently triable only in the lower courts, triable in either the lower or higher courts.

At present, imprisonment is an option only in certain cases, but the new Act will make imprisonment available for most health and safety offences.

Further explanatory notes (including a table detailing the current and new maximum penalties available for specific offences) can be found on the Office of Public Sector Information website at:

http://www.opsi.gov.uk/acts/acts2008/en/ukpgaen_20080020_en.pdf

and a range of downloadable H&S leaflets can be obtained from the Health and Safety Executive website at:

<http://www.hse.gov.uk>

1 Establishing the maintenance strategy and developing a policy

1.1 Maintenance defined

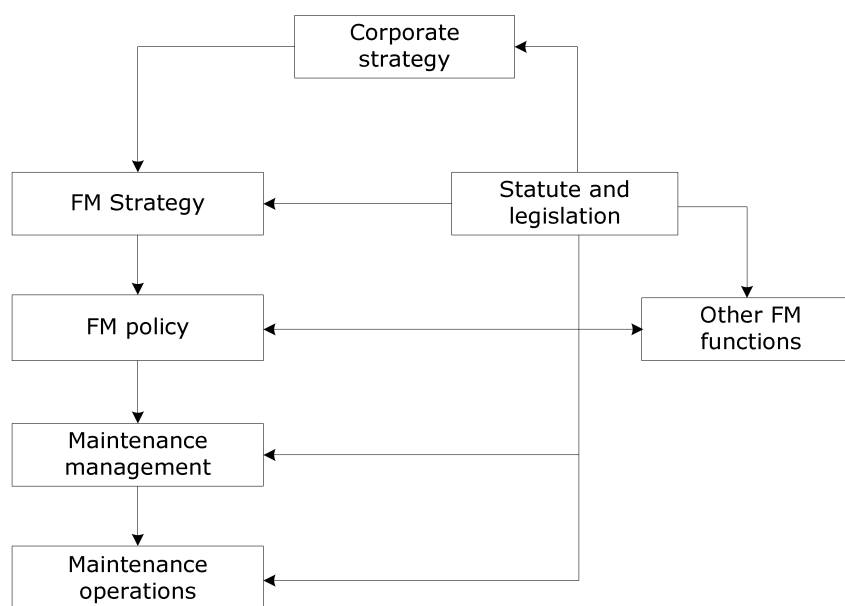
Maintenance is defined by BS 3811:1993 as ‘The combination of all technical and associated administrative actions intended to retain an asset in or bring it to a state in which it can perform its required function’.

This implies that there are two processes to be considered, ‘retaining’, i.e. work carried out in anticipation of failure and ‘restoring’, i.e. work carried out after failure. The former is usually referred to as ‘preventive maintenance’ and the latter as ‘corrective maintenance’. The thrust of any maintenance strategy should generally be towards preventative rather than corrective maintenance; although there may be a ‘run to failure’ policy which may be appropriate in certain situations, for example, tap washers, general lighting service lamp, etc. For larger, more complex, and more important items of plant, machinery, structural elements and decor, a maintenance strategy must be established to work in harmony with and to support the core business corporate strategy.

1.2 Establishing the maintenance strategy

A maintenance strategy should be established so that it shadows and complements, and is aligned with, the corporate business strategy being pursued by the organisation. It therefore follows that the facilities manager should be involved at a high level within the organisation’s hierarchy so that they are fully aware of the long-term plans and overall direction being followed by the organisation, and understand the business drivers (see figure 1, below).

Figure 1. The corporate strategy sets the agenda



The organisation will have adopted a strategy based on having a short-, medium-, and long-term outlook. Typically, the long-term view will be somewhere between five and ten years or maybe even longer if the organisation operates in a business that can be described as 'stable'. Conversely, they may be operating in an industry that is very volatile such as the electronics or telecommunications industry, where new products and systems evolve very quickly. In these circumstances the organisation needs to be very 'agile' and must be capable of making a 'move' in the market at very short notice.

This 'move' in response to shifts in the market may involve the reconfiguration of the facilities, up- (or down-) sizing/re-engineering, or even a complete relocation. The corporate strategy must be poised to meet these demands, and the facilities (including the asset management and maintenance) strategy should therefore be designed and prepared to meet similar demands. To meet various demands, and at the same time deliver a value-for-money service, time-scales must be considered, and therefore the following issues should be taken into consideration:

- What services should be outsourced, and how long should contracts be?
- Should maintenance specifications be input or output based, and what level of performance is required?
- What balance should be struck between planned preventative, condition-based, and corrective (reactive) maintenance?
- How far ahead should we project our life cycle replacements programme?

Once these questions have been answered, and a strategy has been 'set', then it can be implemented through the formation of a 'maintenance policy'.

1.3 Developing a maintenance policy

A maintenance policy should be developed that will allow the strategy to be followed and value for money achieved. The building maintenance policy should be a clear statement of the objectives and methods to be employed in keeping buildings fit for use and in preserving their asset value. It should define the framework on which all building maintenance and management operations are based and state the life expectancy, or required life expectancy, of the asset.

The policy should lay down guidelines concerning acceptable thresholds for technical standards, civil and statutory legal considerations (particularly health and safety issues), budget control, relations with the users of the buildings and the control and execution of maintenance and servicing operations.

1.4 The maintenance policy in context

Buildings are a costly and valuable asset and need to be looked after. An often overlooked consequence of lack of maintenance is the potential cost of damage to information systems and contents, and ultimately a decline in company image. In addition, the costs incurred by, and the benefits accruing from, occupying and maintaining a building have a significant impact on the well-being and productivity of its users. Building maintenance management should therefore be seen as an important component in furthering the business objectives of the occupier.

Accordingly, the maintenance policy should integrate with the wider mission statement, corporate strategy and management policies of the client or

organisation that controls building management, whether as owner-occupier, landlord or tenant. For this reason the maintenance policy should be agreed and reviewed by the senior management of the organisation as part of the overall management strategy. This should include the facilities manager. Senior management should be made aware of the maintenance requirements so that they can set the appropriate levels of funding required to ensure the maintenance policy objectives are met. They also need to be informed of any adverse consequences that may follow from underfunding – this will typically include added expense due to having to perform unplanned maintenance at a later date, which by definition is more expensive to implement than the planned variety.

The absence of a formal maintenance policy can lead to a lack of focus in maintenance organisation, specification and funding which might manifest as misplaced effort, absence of clear direction, neglect and waste of resources. This in turn may result in undue disruption to building users, create health and safety hazards, and cause asset depreciation and poor value for money spent. A building maintenance policy is therefore an essential prerequisite for well-managed and cost-effective building maintenance procurement.

1.5 The maintenance policy overview

The maintenance policy should be a formal document that sets out parameters, guidelines and methods in some detail.

There is no one universal format that will suit all maintenance management scenarios. The format adopted in a particular case should be tailored to the specific needs and agenda of the client or occupier.

As a guide, the main topic areas and headings which may be covered by a maintenance policy are set out as follows:

1. *The policy statement*

(a) **The maintenance policy in relation to the corporate strategy, and the overall management policy**

The production of a maintenance policy is initiated by an examination of the nature of the occupier's business strategy, of the buildings themselves and of the uses to which they are put. This requires consideration of more general business and premises management issues that have relevance to building maintenance decisions. For example, general policy regarding business expansion, rationalisation and relocation needs to be considered in relation to the maintenance policy. Similarly, the cost and suitability of the building stock itself has an impact on these wider business policy issues.

There are three key issues to be addressed at this preliminary stage of maintenance policy formulation:

(i) *The user need and use pattern of the buildings*

The policy statement must take into account the fact that many owners will have more than one building on more than one site and indeed, a large portfolio of many different buildings over a large geographical area. This entails identification of the primary needs (for example, core business); any subsidiary needs (for example, subletting for income); the occupancy types (for example, tenants, employees, customers or public);

and the occupancy times and volumes (for example, opening hours, shutdown periods or any special operations).

(ii) *The suitability of the buildings for their intended use*

This constitutes an assessment of the buildings' adequacy in terms of location, size, layout and facilities for both present and future predicted needs. If they are not adequate, further consideration must be given as to whether they can or should be made suitable within acceptable time and cost constraints, or whether there is a need to consider disposal and the acquisition of new premises.

(iii) *The legal framework of occupancy*

Building occupation is governed by a number of statutes and regulations of which the most relevant to building maintenance are the *Corporate Manslaughter and Corporate Homicide Act 2007* (covered in the introduction), and those detailed at paragraph 1.2 below. There are of course many other pieces of legislation that are relevant to the occupation of buildings, but these are the main ones. A further list of relevant legislation is included at Appendix A to this guidance note.

The terms of tenure of the buildings also have relevance to the building maintenance policy. Leased premises are usually controlled by lease terms that delineate standards of and responsibilities for repairs and service charge payments. Lease terms may also restrict or condition the scope for alterations and improvements to the building. Any such relevant lease terms and conditions should be clearly stated in the maintenance policy statement.

Once these wider management issues relating to the premises have been determined, the maintenance policy may then be developed in greater detail as a maintenance policy statement.

(b) Legal considerations and responsibilities

The main statutory legal considerations (in addition to the *Corporate Manslaughter Act* discussed earlier) are:

(i) *Town and country planning legislation*

The effect of any town and country planning constraints or conditions on the use or extension of the building may require consideration. If any building is listed as being of special historic or architectural interest, or is in a conservation area, the constraints may extend to affect even routine maintenance and servicing operations.

(ii) *Building regulations*

In general, repairs involving materials that are replaced on a like-for-like basis do not require building regulations approval. However, any change in thermal or acoustic properties, weight or structural integrity may require approval. If in doubt it is always best to check with the local building control officer. Certain types of work to a party wall require consent from the adjoining owners under the requirements of the *Party Wall etc. Act 1996*.

(iii) *Fire safety legislation*

Fire safety within premises is a major requirement in building management. Therefore it is often a subject of legislation in order to ensure that reasonable steps are taken at all times to reduce the risk from fire and where it occurs to ensure that occupants can safely escape. The current legislation, which is an improvement on the previous legislation,

is known as the Regulatory Reform (Fire Safety) Order 2005. It covers almost every type of building except domestic premises occupied by a single family. The Order places fire safety responsibility on any person who exercises some level of control in a premises and requires them to:

- carry out or nominate someone to undertake fire risk assessment identifying risks and hazards;
- consider who may be especially at risk;
- eliminate or reduce the risk from fires as much as possible and provide general fire precautions to deal with any residual risk;
- establish a plan to deal with any emergency and document findings; and
- take necessary measures to ensure fire safety where flammable or explosive materials are used or stored.

(iv) *Health and safety legislation*

Health and safety rules under the *Health and Safety at Work etc. Act 1974*, and associated regulations such as *The Management of Health and Safety at Work Regulations 1999*, are becoming increasingly pervasive in regulating workplace provisions and maintenance working practices in occupied premises to safeguard both maintenance operatives and building occupiers. It should be noted that occupiers are required to undertake risk assessments for routine maintenance operations under the health and safety regulations.

In particular, COSHH (*Control of Substances Hazardous to Health*) Regulations 2002 and *Construction (Design and Management) Regulations 2007* (CDM 2007) apply to some types of building maintenance and refurbishment works. The CDM Regulations place a requirement upon a building owner to hand over or make available to a contractor or new owner all relevant information relating to the safe undertaking of any works on the buildings or plant. Also, hazardous materials (such as encapsulated asbestos, calcium silicate bricks or radon gas, etc.) may be present that require specific procedures and standards of maintenance.

(v) *Disability discrimination legislation*

Under the requirements of the *Disability Discrimination Act 1995* (updated in 2005), employers are obliged to undertake 'reasonable adjustments' to their premises and the way it operates if the employment arrangements or premises substantially disadvantages a disabled employee. A statement should be included in the maintenance policy to set out the policy of access audits and appraisals, and how work needs arising therefrom will be addressed. The policy should also set dates by which certain alterations ought to have been made in order to comply with the Act.

(vi) *Leases and service charges*

The terms of tenure usually define which party is responsible for repair and maintenance of the various building elements, the standard of maintenance and the payment mechanism (usually via a service charge). There may also be restrictions on alterations and improvements to the property. This will be enforceable through the courts depending on the terms and conditions of the lease.

The unexpired term of the lease (i.e. how long it has left to run) may have relevance to the maintenance policy in as much as it affects long-term repair or improvement. The policy also needs to take account of hand-back (dilapidation) requirements.

(c) Environmental policy and sustainability

Many organisations have developed an environmental policy statement detailing their approach to local environmental concerns, materials sourcing, waste disposal policies and energy management policies in an attempt to set up a framework to achieve a sustainable operation.

Energy management is increasingly and particularly important, not just because we have recently seen massive increases in the cost of fuels, but also following the introduction of the 'climate change levy' that penalises consumers (not domestic users) by adding an amount to each unit of fuel (energy) consumed. For more details on the climate change levy see the HM Revenue and Customs (HMRC) website (www.hmrc.gov.uk) which gives details of the actual charges levied on different fuels to encourage us to be more efficient.

These measures (and no doubt others that must be in the pipeline) are designed to encourage (if not force) us to reduce our carbon footprint in an attempt to slow down the rate of climate change.

Another consideration is our consumption of water. In the last few years we have experienced near drought conditions (especially in south east England) and this has led to rationing in the form of hosepipe bans. Therefore, when the opportunity arises, consideration should be given to the introduction of waste water recycling and rainwater harvesting systems.

So far as these issues can affect the maintenance operations, a statement should be included in the maintenance policy document. The Department for the Environment, Transport and the Regions (DETR), now the Office of Public Sector Information (OPSI), produced an environmental action guide for building and purchasing managers, which gives further useful guidance (HMSO, 1991).

DETR have more recently issued the *UK Waste Strategy 2000* and, on transferring environmental responsibilities to the Department for Environment, Food and Rural Affairs (DEFRA), have released *Waste Strategy for England 2007*.

On a more general note, we now have the ISO 14000 family of standards that addresses various aspects of environmental management including the development of Environmental Management Systems (EMS), labelling of materials, waste management, performance evaluation, life cycle analysis, communication and auditing.

The maintenance regime should be designed around the idea that buildings should be socially, economically and environmentally sustainable, and not purely economically driven. What we need to develop is a corporate social responsibility (CSR). In the wider sense, sustainability, or to be more accurate, 'sustainable development', was defined back in 1987 by the Brundtland Commission as development which 'meets the needs of today without compromising the ability of others to meet the needs of tomorrow'. This obviously implies that we should think about the consequences of what we do today for the long term.

Buildings and their facilities should therefore be maintained and managed in ways that minimise their environmental impact but still meet the occupier's and owner's requirements. In this context, sustainability goes beyond the issue of environmental protection and resource conservation, it embraces the concept of social equity and respect for people and thereby embraces a range of social goals, from health and well-being to good governance. Increasingly it is the drive to ensure delivery of this wider agenda which presents us with some of the biggest challenges as legislative changes impact on building usability and increasing emphasis is placed on occupier requirements. Money spent on this area should not be considered as money wasted though; in the long term, sustainability performance will influence capital value, as buildings which show good performance across the TBL (see below) are likely to suffer less obsolescence and value depreciation. The opportunity should be taken at the time of replacement and/or refurbishment to introduce more sustainable components and materials. This can also provide the opportunity of extending life expectancy together with a reduction in environmental impact.

Any maintenance operation should be run to budget, but taking our social responsibilities into consideration, a wider understanding is needed in that we must learn to make decisions based not just on the 'single bottom line' of profit and short-term economic gain, but on the 'triple bottom line' (TBL) of environmental protection, social justice and economic viability. When considering this TBL philosophy, it is apparent that there are innate conflicts between the business decision-making process and delivery on the TBL. In no area is this a greater challenge than in asset management, where conventional decision making is based on the concepts of risk reduction and maximisation of returns. Additionally, for the public sector the requirement for business efficiency and achieving 'value for money' may seem to sit uncomfortably with the TBL, therefore the challenge is to achieve business efficacy whilst also meeting environmental and social targets.

We must now accept that there is more to 'sustainability' than just the energy-efficient design of buildings, and that appropriate management and refurbishment of existing stock is vital to meeting any form of sustainability targets. A combination of maintenance and life cycle replacement of materials, equipment and components should therefore be designed with this in mind.

Buildings (in general) have a high environmental impact. It has been estimated that within the UK buildings are responsible for up to 50 per cent of all carbon emissions. Additionally, buildings are associated with pollution, water use and the depletion of finite resources. Effective and efficient maintenance is therefore key to the delivery of any environmental agenda. The environmental impact can be viewed in terms of all stages of the life cycle from site choice, including location, to construction, to use and operation, and eventual demolition.

Those responsible for the maintenance will be most interested in the 'use and operation' phase of the life cycle, and in addition to the actual maintenance operations should consider energy use, water consumption and waste management, all of which can be influenced by the maintenance strategy and regime chosen and followed by the organisation.

2. The policy as it relates to building users

(a) Standards of maintenance

This section of the maintenance policy indicates the standards of maintenance considered appropriate for the building use and expected by the building users.

Standards may define key services that require special attention and may set down functional and cosmetic standards for different areas or facilities. For example, a factory unit may rate aspects of building functionality (such as temperature control and weathertightness) more highly than cosmetic appearance; whereas the selling area of a retail unit may rate standards of decor and cleanliness as being equally if not more important.

It should be noted that higher standards usually have higher initial cost implications (although not necessarily if whole life costs are taken into account) and this should be carefully considered. It is not sufficient to state vaguely in the policy that the building should be maintained to a high standard at a minimum cost. Such a statement does not inform and it contains an inherent contradiction between standard and cost. Standards set should therefore emphasise the comparative importance of functionality, finish, longevity and cost for the building as a whole and even between different parts of the building.

Cleaning operations aggregate to a very significant property occupancy cost and have a direct influence on standards of maintenance. The costs, standards and organisation of cleaning should therefore be seen to be within the broader remit of the building maintenance and/or facilities manager.

(b) Health and safety

The minimum acceptable standard is that required by statutory health and safety legislation referred to previously. Other specific health and safety risks will be relevant to building maintenance operations. For example, works to heating and electrical systems in a care home or a hospital may require special arrangements to maintain an acceptable level of service. Special attention should also be paid to the maintenance of air conditioning plant and equipment, especially water treatment, in order to eliminate the risks from water-borne contamination including legionella. Of equally high importance is the need to implement, maintain, review and regularly update asbestos registers, which should be referred to before any work is undertaken. [Regulation 10 of the *Health and Safety at Work Regulations* 1992] stipulates that an exchange of information occurs between those responsible for a building and persons working within, or on, it. This is further supported by various codes of practice designed specifically for ensuring safe working practices are followed involving premises that contain (or may contain) asbestos, namely: The *Control of Asbestos Regulations* 2006 issued by the Health and Safety Executive (HSE). This document includes details of any special licences that need to be obtained before work can proceed.

Guidance on the 'Duty to Manage Asbestos' is also available in the 'Approved Code of Practice and Guidance (L127)' part of *The Management of Asbestos in Non-Domestic Premises* also issued by the HSE in 2006.

(c) Security and access

Access for maintenance works may in some cases compromise security provisions. Ways of monitoring access and egress and vetting and supervision

of maintenance contractors' operatives may be required. The hazards associated with routine maintenance should also be considered, for example, maintenance that requires staff to go into hazardous areas such as high-level flat roofs for relatively small maintenance tasks.

Working at height is now specifically covered by the *Work at Height Regulations* 2005 as amended by the *Work at Height (Amendment) Regulations* 2007.

(d) Work in occupied premises

There is always a need for procedures for notifying building occupiers of impending maintenance works. For larger works this may include setting appropriate periods of notice to be given before works start. Consideration should also be given as to whether any large-scale maintenance works may interrupt the quiet enjoyment of the premises to which tenants and leaseholders may be entitled, as this may have legal and financial ramifications. It is usually prudent to carry out and agree precondition surveys with the owners of adjoining property before commencing any work. This will assist in pre-exempting or substantiating any subsequent claims for damage caused by the work.

These safeguards can be brought together by the introduction of a well-designed 'Permit to Work' system. Permits must be obtained, completed, and 'signed-off' by the relevant person responsible prior to work commencing. Guidance is available on 'Permit to Work Systems' from the HSE website (www.hse.gov.uk). Various systems for different types of work in a number of different types of industry are described on this website, and the relevant guidance notes can be found depending upon the type of work envisaged and nature of the location concerned.

3. Organisation

This section of the maintenance policy deals with the staffing and the methods to be used in maintenance management. This largely depends on the size of the client organisation and their line of business. 'In-house' building maintenance may be viewed as merely lateral diversification with large associated businesses.

(a) 'In-house' or 'outsourced' maintenance management

The management of building maintenance within an organisation usually requires a range of professional and technical staff. These may be permanent or contract employees within the organisation or professional chartered surveying firms engaged to manage some or all of the building maintenance functions. The latter option is referred to as 'outsourcing' (it should be noted that there is much debate over the precise meaning of this term). However, at least one member of senior management will be required to oversee building maintenance operations. The policy statement should indicate how these needs will be met. Alternatively, building maintenance may be incorporated into a facilities management contract for the building/estate.

There are of course advantages and disadvantages to each of these strategies. While 'outsourcing' could mean a high degree of expertise at your fingertips when required, as with most types of contract, deviations from the prescribed requirements could prove costly. Also, 'customer care' may be difficult to procure. This will, however, depend on the nature of the work and the term involved.

(b) Contractors/directly-employed labour

Most organisations now contract out the physical aspects of building repair. There may, however, be instances where an 'in-house' body of labour is retained to carry out very specialist work, for example, where breakdowns have to be dealt with immediately or where security is a high priority. There are also situations where the bulk of the maintenance work is contracted out, but the organisation will retain the services of a 'handyman' to perform run-of-the-mill tasks as and when they occur in order to get an immediate 'fix' without the need of a 'call-out' to the maintenance contractor.

Before adopting either (or both) of the above strategies, an investigation into the value for money of such an approach should be made, and any arrangements decided upon should be taken into consideration within the terms of any subsequent outsourced maintenance contract let. In other words, ensuring that you are not paying a contractor for work that you have already done yourself.

(c) Planning

The resulting maintenance work needs to be planned in terms of time. It will be evident from points already raised within this guidance note that certain aspects of building maintenance work have higher priorities than others. Whilst some work will depend very much upon the profile of the organisation, whether or not buildings are leased, etc., matters relating to health and safety may require immediate action in order to avoid criminal prosecution. Other work may fall into regular cycles. Many items, particularly those having moving parts (such as plant, machinery and equipment) require routine regular servicing to ensure optimum efficiency of operation. The maintenance policy should give guidelines on the extent of such needs. This should be based upon a balanced view of the costs of carrying out such work, compared with the cost of interruption of use, i.e. by not pursuing such routine servicing, but operating on a breakdown repair policy only.

Maintenance resulting from the unexpected, for example, storm damage, vandalism, etc. needs to be accounted for as well. The maintenance policy should therefore not only give guidelines as to the scope and extent of the maintenance programme but also guidance relating to response times required for different types of repair.

The terminology used to classify building maintenance work is covered in BS3811 and briefly in Part 2 of this guidance note.

The usual planning cycle for a preventative maintenance programme is five years although it may extend from 1 to 20 years or even longer under certain circumstances. It is normal practice now for surveyors and planners to put together maintenance cost plans extending upwards of 30 years for Private Finance Initiative or Public Private Partnership projects (PFI/PPP projects) where the organisation providing/building the facility is also tasked with running it for such a duration. These extended plans, where the total length will extend beyond the life expectancy of many of the building components, must therefore also take into consideration replacement costs as well as maintenance costs. Maintenance costs and life cycle replacement costs are therefore combined in the most advantageous way to achieve the optimum value-for-money solution over time.

There may be different maintenance and replacement scenarios that will achieve the physical aims, but the costs and timings of expenditure will vary. These differences in costs over such an extended period of time can only be identified, defined and compared using analysis methodologies such as Discounted Cash Flows (DCF) and these should be used to ensure that a fair comparison of the different options is achieved by reducing the total project cost (over x number of years) to the Net Present Value (NPV).

These methodologies take into consideration the expected (predicted) future inflation and interest rates, and a useful guide in the application and the technique is available from the Treasury office. A download is available from the HM Treasury website using the following link:

http://www.hm-treasury.gov.uk./media/D/0/pfi_hedging120506.pdf

Using this technique will ensure that the optimum value-for-money solution can be identified and adopted.

Routine cleaning operations may also be considered to be part of the planned maintenance operation, and where this is the case, then these operations and costs should also be scheduled with the planned maintenance programme and factored into the cash flow equations.

(d) Identifying maintenance needs

This area is dealt with in detail in Part 2 of this guidance note. The maintenance policy statement should have a brief outline of the intended methods and procedures.

(e) Procedures for safe systems of work

The *Health and Safety at Work Act 1974* requires every employer to, 'so far as is reasonably practicable' ensure the health, safety and welfare at work of all their employees and anyone else that may be affected by their undertaking. Fundamental to this requirement is a safe system of work procedure that results from systematic examination of a task in order to identify all the hazards (risk assessment). It then defines safe methods to ensure that hazards are eliminated or risks minimised. The provision of a safe system of work encompassing permit to work systems is the most comprehensive of an employer's duties. A lot of maintenance work is potentially full of risk. The maintenance policy must therefore give guidance on procedures for risk assessments and determination of safe systems of work, particularly if directly employed operatives are used (i.e. when the employer has much greater responsibility, not only as building owner but also as staff employer). Similar responsibilities of care are owed to subcontractors, agency and temporary employees, all of whom should be adequately trained and qualified for the tasks they are expected to undertake. They should also be made aware of all the health and safety issues that apply, and be provided with the appropriate Personal Protective Equipment (PPE) for the tasks to be undertaken.

4. Procurement

This area is dealt with in Part 4 of this guidance note. Overall policy on procurement methods should, however, be outlined in the maintenance policy statement.

5. Monitoring and feedback

Once in place, the maintenance policy should be subject to periodic assessment and review in light of experience and changing needs over time. Appropriate monitoring and feedback mechanisms should therefore be instituted to ensure the policy continues to be relevant and efficient.

(a) Reporting to the management board

As a cost overhead building maintenance is often in competition with other more visible demands for resources within an organisation. Costs incurred in maintenance will therefore need to be summarised and presented to the management in order to justify past budgets and to secure future budgets (see also subsection 5.4 below, 'Management Information Systems'). This is also dealt with in more detail in Part 2 of this guidance note.

(b) Quality and environmental management routines

In many organisations there are now formal quality management regimes in place (for example, in accordance with ISO 9000:2000 Quality Management, and later this year, updated to ISO 9000:2008) into which framework the building maintenance operation should fit. Consideration should be given in the maintenance policy statement as to whether any quality management routines need to be instituted. For example, a building user survey or questionnaire may be employed as a means of determining levels of satisfaction/dissatisfaction with the maintenance operation, environmental conditions, etc., which may otherwise adversely affect user efficiency and/or morale.

Similarly, many organisations now work within a framework based around ISO 14000 for their activities that may have an environmental or sustainability impact. This will typically include ways in which energy and water consumption and waste are managed, and an appreciation and even the measurement of the organisation's carbon footprint, with a view to reducing it.

(c) Benchmarking

Benchmarking is considered to be a valuable tool for assessing the effectiveness and efficiency of the maintenance operation. It is becoming increasingly common in maintenance management to seek benchmarks by which the performance and cost of a building or estate can be measured against other comparable buildings or against previous cost levels. However, it is imperative that true comparables are used, and to aid this operation the new ISO 15686 Part 8 has been published, which standardises the method to be used when collecting data on capital, maintenance, operation and occupancy costs.

Benchmarking requires access to information about the maintenance costs of other comparable property. This information may be derived from analysing costs elsewhere within the estate (to assess which are the most cost-efficient buildings in terms of maintenance) or from information on such costs from outside the estate.

Some chartered surveying practices, with large portfolios of clients, may be able to provide such benchmarks by gathering information from across the whole practice portfolio (although care will be taken to preserve the confidentiality of individual clients). Benchmarking clubs can be established

where a number of organisations provide and share data without knowing the identity of its particular source, even though they may know who the other members of the club are.

One of the main sources of readily available maintenance cost data is BCIS. BCIS collects and collates maintenance costs from subscribing clients and other sources, and publishes estimates of maintenance and occupancy costs based on all available data.

Benchmarking the cost of the maintenance operation is a relatively straightforward exercise providing that expenditure is assigned to the correct cost centres. For example, improvements and other project work may look like maintenance, but for benchmarking purposes these costs should not be assigned to the maintenance operation. This is because the comparable data that will be used to compile the benchmark will only include the cost of 'true' maintenance, and so a false impression will result from including other (although related) costs.

Just as important today as benchmarking the costs is benchmarking the performance of the maintenance operation. This poses more problems as it is not as clear cut as benchmarking the costs. In order to assess the performance it is often useful to conduct a user satisfaction survey to find out how the service is perceived by the customer, in addition to analysing data on breakdowns, etc., probably compiled from help-desk records. Only when both cost and performance have been benchmarked can we ascertain whether or not value for money is being achieved.

On the subject of value for money, it should also be noted that things can be over done as well as neglected. It might sound obvious, but pieces of critical equipment will need to be maintained to a higher level (specification) than non-critical equipment. As such, different service levels should be determined for different items of equipment depending on their importance so that money is not wasted on over-specification.

(d) Management Information Systems

Moving on a stage from benchmarking, which is essentially targeted at specific criteria, we now take a brief look at Management Information Systems. This is a methodology of looking at the 'bigger picture' in terms of business performance by presenting information delivery in a number of different ways, especially through graphical output. All the data must already exist in some form, and the information systems manipulate it in a number of various ways in order to present what it is we specifically want to convey. For example, the output can be in the form of 'digital dashboards' or 'traffic light systems' where they typically make use of the concept that green is good, red is bad, and amber is somewhere in between, and the graphics reproduced resemble readily recognisable dials, clocks and the like.

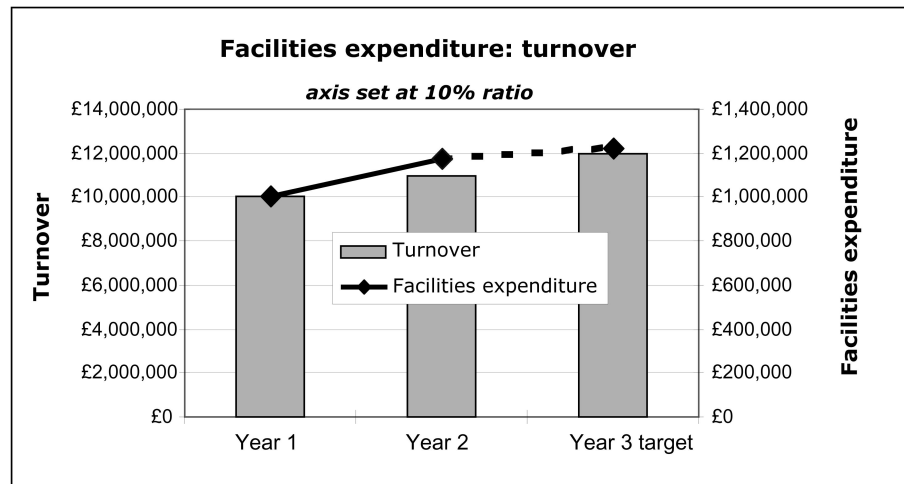
The idea of these systems is to represent and relate different facets of the business to the overall business strategy. Providing the information is collected and inputted to the system in the first instance, we could show how the business is performing in terms of, for example, very diverse criteria that could include:

- staff training;
- rate of sick leave taken;
- share price;

- sales; and
- investment return, etc.

A typical output to show how the maintenance operation relates to the overall business performance would be to look at expenditure in relation to turnover, and this could be represented in a graph (see figure 2, below).

Figure 2. The relationship between facilities expenditure and company turnover



This type of output is good for showing ‘trends’. In the above example expenditure for Year 2 had crept up to more than 10 per cent of turnover, which is where it was in Year 1. The projected figure for Year 3 (although up in real terms) was coming back on track in percentage terms.

To be able to demonstrate this type of relationship is obviously very useful when presenting facts and figures to senior management who are mainly interested in ‘the bottom line’.

(e) Backlog management and monitoring

Backlog maintenance is work that has been deferred on a planned or unplanned basis, usually as a result of inadequate funding. Efficient maintenance management must include the monitoring of backlog maintenance, normally through the rolling programme of condition surveys, to determine the extent of outstanding work remaining from that which should be undertaken (i.e. because of breakdown, failure or cyclical programming). The maintenance policy should include a procedure by which this backlog is collated, recorded, monitored and reported to those who control the allocation of funds/resources. There are now a number of software packages on the market that provide the facility to integrate backlog maintenance with current scheduled maintenance programmes. In general, these packages are designed to facilitate this procedure and produce reports in various formats to meet a range of management and reporting requirements.

(f) Disaster recovery and business continuity

Every business should be prepared for a sudden unexpected event that could range from what could be described as a ‘minor incident’, right up to what could be considered a ‘major disaster’. Examples might include anything ranging from a short-term power outage to major flooding resulting in long-term disruption should a plan not be in place. The seriousness of the

event will dictate the level of potential business disruption, and this is where a well-prepared disaster recovery plan comes into its own. Continued operation in the event of disruption is a fundamental requirement for most organisations, hence the need to plan ahead as to how business would continue to function during a crisis. In most organisations this duty falls to the facilities manager, as it is his/her responsibility to ensure that all processes, procedures and systems are in place to keep the business running smoothly at all times.

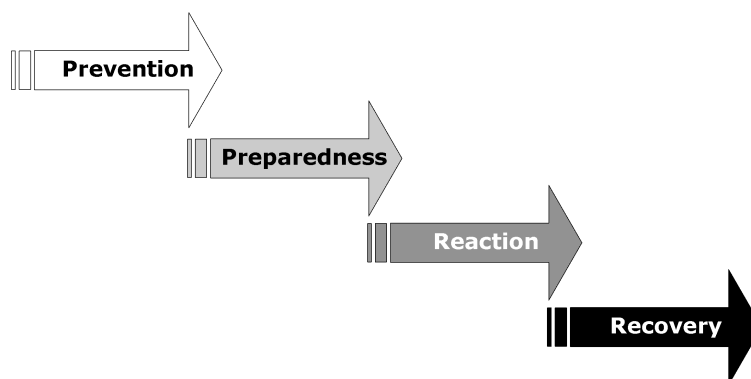
Internally generated incidents or failures with the potential to disrupt businesses could include deficiencies in the maintenance regime, or a failure to comply with it. All efforts should therefore be made to ensure that this is not the case. However, things do go wrong from time to time, and when they do, we must be ready to put our contingency plans into action.

There is now guidance available to help with preparing our plans. BS 25999:1 (2006) is the first British standard for business continuity management. It was developed to help minimise business disruptions and maximise recovery outcomes in cases of business process failure. It provides the basis for understanding, developing and implementing business continuity plans within organisations. In addition to the first standard, BS 25999:2 (2007) now sets out the requirements for establishing, implementing, operating, monitoring, reviewing, exercising, maintaining and improving a documented 'Business Continuity Management System'. This can be utilised by internal or external parties to assess an organisation's ability to meet its own business continuity needs as well as complying with any customer, legal or regulatory requirements.

As far as the maintenance operation is concerned, incidents that result in business disruption are rarely caused by a one-off straightforward event, but are more likely to be the result of a chain of events. A chain is only as strong as its weakest link, so it is important to ensure that the maintenance function is not that weak link.

However, regardless of cause, we must have a process in place that enables business to recover swiftly from 'disaster' and minimises the damages. The process will in the main consist of four distinct phases to help avert disruption, namely: prevention, preparedness, reaction, and finally, recovery. See figure 3.

Figure 3. Disaster recovery. The four phases of averting or recovering from business disruption



1.6 The impact of design on maintainability

Those of us involved in the maintenance of buildings and facilities would all like to be able to turn back the clock to the time of the design process. How often do we look at a building and think how wonderful it looks, without considering the practicalities of maintenance, and in this context, also the cleaning? Similar consideration should also be given at the time of procuring refurbishments and adaptations, etc. Where the original design may have had some shortcomings, this point in time may provide the opportunity of correcting some of the original deficiencies in the design where maintainability is concerned.

The maintenance of a building often only comes to the fore following construction. This change in emphasis from design and construction to maintenance and occupation also epitomises the challenge of gaining the right balance between the needs of design and construction and that of maintenance and occupation. The advent of CDM (Construction Design Management) went some way to ensuring that buildings and facilities were designed with some thought to future activities, including maintainability, window cleaning, etc. Similarly, care should be taken to ensure that we do not 'value engineer' maintainability out of a project at design stage in our efforts to achieve value for money. This can be a false economy in the long term.

The balance between design/construction and occupation/maintenance can be viewed in terms of finance, quality and time. Minimising finance, quality and time on the design/construction side can give the potential risk of more significant maintenance issues and consequently greater finance, quality and time problems once occupied, particularly if this minimisation was not the result of professionally undertaken value engineering (see figure 3). The potential impact of consequential maintenance problems is evident when compared to the ratio of construction (capital) to occupation/maintenance costs of 1:5, so that achieving the correct maintenance is a significant factor in the life of a building. (*Source: Evans, R., Haryott, R., Haste, N. and Jones, A., The Long Term Costs of Owning and Using Buildings, Royal Academy of Engineering, London, 1998.*)

It is therefore important to achieve a good design with the right balance between design/construction and occupation/maintenance. This balance will vary depending on numerous factors such as a client's perspective on use, design life, cash flow and similar matters. This can become more complex in projects such as PFI schemes when parties have responsibilities on opposite sides, such as a contractor responsible for the construction and an FM provider responsible for maintenance.

Good design should encompass consideration of the life of the building, envisaged occupancy and aspects which impact on maintenance. Examples of these aspects which impact on maintenance include:

- Access to plant, equipment or other areas to be maintained.
- The selection of materials or products to give an appropriate level of maintenance to suit the building function, maintenance budget and desired level of building quality.
- Adequate facilities within the property to enable maintenance and cleaning.
- A suitable level of availability of maintenance materials, parts, etc.

- Achieving the design whilst minimising, or using alternatives to, specialist maintenance.

To achieve these characteristics, it is therefore prudent to have building surveyors, facilities managers and other professionals as appropriate within the design team. Later modification to make the building/facility more ‘maintainable’ will be costly. Changes to buildings once constructed are far more expensive than the same changes made early in the design stage (when still on the drawing board). This will inform and therefore enable designers to incorporate changes to improve the maintainability throughout the lifetime of the building or facility in question. This would also permit an informed choice by the client on the selection of a design where more than one option is available.

Figure 4. Relationship between design and maintainability



Maintainability increases in line with a value-managed design with occupation and maintenance in mind.

Building surveyors, facilities managers and other professionals should also contribute to any post-occupancy evaluation of a building. This will give a feedback loop to the design team on whether the design actually achieved a successful building, enable lessons learnt to be applied to future projects and could also reveal any changes required to the maintenance regime.

2 Identifying, prioritising and presenting maintenance requirements

Having established the maintenance policy for a building portfolio, the next step is to consider how it is to be put into practice. This will entail the setting up of methods and procedures to determine:

- what maintenance and repair works need to be done;
- when these works will need to be done;
- how the work can be undertaken safely;
- how much these works will cost; and
- what works are the most necessary, if funds may not cover all of the work identified.

These criteria will be met by implementing the three operations detailed below.

2.1 Identifying the maintenance needs

Identifying the maintenance needs involves collecting and assimilating information from:

- regular condition surveys of the building stock;
- pre-acquisition surveys prior to any building purchase;
- the existing planned maintenance programme (or profile);
- faults and repairs notified by the building users;
- feedback from works of servicing, repairs and improvements in progress;
- relevant legal requirements either from statute law or from lease and rent and repair covenants and any changes/updating of legislation;
- existing building and service records; and
- older buildings, which may be affected by legislation that came into effect after they were constructed. Legislation necessitates asbestos surveys and management plans, DDA assessment and fire risk assessment amongst other requirements.

Keeping track of all the required information in maintenance management requires careful handling to avoid errors, omissions or excessive bureaucracy. Particular points to bear in mind are:

Only collect information required for a specific purpose and outcome. Do not be tempted to collect information for its own sake or because it may be useful at some later date. Too much information swamps the management system with irrelevancies and makes the extraction of relevant information much more difficult.

Collect all information to a standard defined format or protocol, such as that outlined in the RICS publication, *Standard Maintenance Descriptions*, or property occupancy cost analysis definitions available from BCIS. Information

on building maintenance matters is very diverse and requires structuring to be useful in maintenance planning. In particular, if computers are used to gather and store data, ensure that the database format is developed in line with the protocol that is to be used, and as such is suitable for the processes and outputs that will be required.

Keep all information relating to a particular building or tenancy in the same place. This will ensure that vital information, for example, relating to repair and service charges responsibilities, will be readily available when planning and implementing maintenance works orders.

2.1.1 Condition surveys

The cyclical condition survey is the most common method used for the routine collection of information required to plan a maintenance programme. Carrying out a condition survey is covered below. However, the RICS guidance note, *Stock Condition Surveys* (July 2005) provides more details regarding how and when clients may benefit from such surveys.

Scope and nature

The condition survey is a systematic survey of a building by a qualified, preferably chartered, surveyor. Condition surveys should be all embracing, not only covering external elements of the building (i.e. walls, roofs, etc.) but also internal surfaces, grounds, underground services and wherever possible, engineering plant, equipment and services. (The surveyor must, however, be conscious of their own areas of expertise and, when undertaking condition surveys of engineering services, etc., should seek expert advice whenever appropriate.) The survey proceeds, noting the forms of construction; elements and finishes; their condition or state of repair; and at what point in time, usually within the next five years, renewal will be necessary. Increasingly, major repairs and renewals that will fall due in the next 10, 15 or even 20 years are flagged up (this can only be subjective but does aid long-term property management investment issues).

The repairs and replacements are scheduled by years to repair, that is, how many years from the time of the inspection the repairs are most likely to fall due. It is usual for the surveyor to give an indication of the likely cost of the repair for budgeting purposes. The costs should be revised annually for inflation, based upon recognised building cost indices.

Additional information collected may include the criticality of the repair in relation to the use and importance of the area in which it occurs and/or the consequences of postponing the repair beyond the specified year in terms of further deterioration or cost-growth of the repair item.

For a large estate of buildings the condition survey may be preceded by a broad-brush survey that determines the overall state of repair of a building in relation to the other buildings. This enables the more expensive and time-consuming condition surveys to be more effectively targeted on those buildings requiring early attention. Careful consideration should be given to the commissioning of stock condition surveys, i.e. is cost information required or is it to be a working document for use by the premises/estates staff?

Frequency

The condition survey is often undertaken at five-year intervals for given buildings with annual reviews for the preparation of work programmes. For a large building stock a rolling programme of condition surveys may be implemented. In such a programme one-fifth of the stock is surveyed each year thus spreading resources evenly over each year. The frequency varies from client to client and depends upon the age, condition and function of the building and is influenced by the standard of maintenance to be upheld.

Outcome

The outcome of a condition survey consists of a description of the various construction and service elements of a building and a costed schedule of repairs and replacement required (scheduled by years to repair from the time of the survey). Optionally, a condition rating may be recorded for the elements, whether repairs are required or not, as an ongoing index of the functionality and rate of deterioration.

At the time of considering the findings of the condition surveys and their projected costs, the option of improved specifications for the replacement, particularly with regard to thermal insulation or obsolescence of components, may lead to significant improvements in the useful life of the building. All these issues should be considered together, with any maintenance and life cycle replacement schedules already in place. These should then be adjusted to accommodate any 'new' requirements discovered at the time of the survey in a way that achieves the best value-for-money solution, as discussed earlier.

Other related building management information may also be profitably collected during condition surveys, for example, health and safety audits, energy audits, space utilisation surveys or disability access audits.

2.1.2 Pre-acquisition surveys

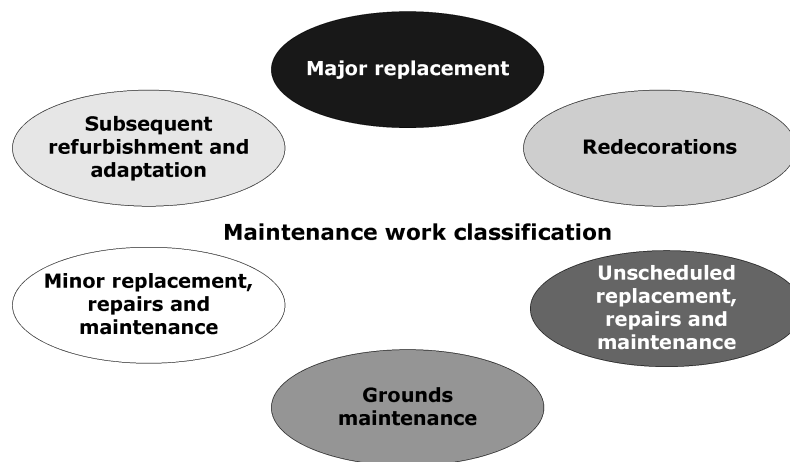
These will include all the elements of a condition survey, but obviously these are performed prior to the purchase of a building or entering into a lease agreement. In addition to the exercises performed as part of a condition survey, the pre-acquisition survey should also include an environmental audit (see note on EPCs below) and the workmanship of any recent refurbishments or alterations should be checked. The outcome of the acquisition survey will help decide whether or not to go ahead with a purchase, or may influence negotiations regarding price. The whole maintenance and life cycle replacements programme will depend upon, and be designed around, the results of this survey, so the facilities and maintenance managers should be involved from the outset to ensure that these programmes are compiled from the earliest possible date.

It is also worth noting that Energy Performance Certificates (EPCs) are now required for commercial properties in England and Wales. Working on a scale of A (very efficient) to G (very inefficient), an EPC quantifies the energy efficiency and carbon emissions from a building and its services, including its heating and air conditioning systems. From 1 October 2008 the marketing of commercial buildings will be prohibited unless an EPC has been obtained, and in the case of new buildings, builders will be required to have an EPC before the building control inspector issues a completion certificate.

Classification of maintenance work

ISO 15686 Part 8 classifies maintenance work using the following headings (see figure 5, below):

Figure 5. The six typical classifications of maintenance work



- **Major replacement** – Work that involves the large scale renewal or replacement of obsolete or worn out components or elements of a building or building services. This classification of work is usually planned but may be instigated as a result of damage.
- **Redecorations** – Work carried out to restore the aesthetic value or weather protection of buildings. This is usually cyclical in nature and carried out at regular pre-determined times to ensure that expected decorative state and protection is maintained.
- **Unscheduled replacement, repair and maintenance** – Repairs and/or replacements carried out after faults or damage has occurred. Generally they are reactive in nature and could include serious emergency work or health and safety related tasks.
- **Grounds maintenance** – Maintenance work relating to the upkeep of hard and soft landscaping, may include some elements of tree surgery, external cleaning, snow clearance, gritting, etc.
- **Minor replacement, repair and maintenance** – Usually unplanned non-urgent day-to-day works to restore faulty or damaged building components to good working condition.
- **Subsequent refurbishment and adaptation** – Maintenance undertaken (possibly including some project works) planned in advance to 'modernise' or alter a building to prevent it from slipping into obsolescence, or becoming obsolete for its required use.

2.1.3 Existing planned maintenance programme or profile

In most instances a planned maintenance programme will already be in place. This requires annual updating, taking account of new information from condition surveys, feedback from service reports, statutory tests and inspections, and repair works undertaken. Any additional works considered necessary should first be compared with the existing programme of works to ensure priorities and strategies are not compromised.

2.1.4 Faults and repairs notified by building users

However well the planned maintenance routines work, there will always be a need to respond to unexpected or minor repairs that arise. Freak weather, vandalism or unexpected breakdowns are all examples of this type of work. However, care must be taken to ensure that reactive repair action does not duplicate or negate pre-planned, cyclical or programmed repairs, warranties, etc. A procedure needs to be set in place to ensure there is no conflict. Again, software is now in place to assist with this task. Various Computer Aided Facilities Management (CAFM) and workplace management systems have the capacity to take into consideration 'maintenance due' when a repair request is made, thus ensuring there is no duplication or conflict between the two operations.

A clearly understood system is required, for building users to notify such wants of repairs, and by which they are actioned. It may be advisable to have one person in the building responsible for collecting and passing on these repair notifications from users, for example, the caretaker or premises manager. Alternatively a standard form and internal post-box system may be used. A third method, via telephone, may be adopted, provided that the person receiving the calls is usually available to take calls and has sufficient training to accurately identify and log the want of repair. For larger estates and portfolios, a dedicated help-desk facility should be considered with an 'out of hours' emergency procedure set up.

On receipt of any such notification the maintenance manager must arrange for the required repair to be evaluated and prioritised. This includes ensuring that there is sufficient information about the repair requirement on which to make a decision. This may require calling back the originator of the request for further information. In some cases, it may mean arranging for a surveyor to inspect, although because of the delay and expense in doing this, it should only be undertaken if the repair appears serious. Frequently such requests may require immediate action by a contractor who may advise further works over and above making the building or services safe, watertight or functional. The maintenance manager must also prioritise the repair according to its urgency and significance. Common prioritising criteria for day-to-day repairs are:

- Urgent (within 24 hours) – used when the want of repair threatens the continued use or security of the building or when there are health and safety implications. Even shorter response times may be specified where 'critical' plant or machinery is concerned (in hospitals, for example).
- High priority (within 7 days) – used when the repair needs doing, but it is not critical to maintaining the building (i.e. ensuring it is wind and weatherproof) or essential services are not affected.
- As and when – used for repairs that are not critical to the function of the building. These may be attended to during other routine maintenance

operations or when funds are available. They are particularly useful for 'actioning' towards the end of a financial year to ensure maintenance budgets are committed.

As a general rule the more urgent the priority, the more expensive the same repair will be, due to the contractor's need to reprogramme their workload to accommodate short-notice works. Priorities should therefore be assigned realistically and in accordance with a uniformly applied policy.

2.1.5 Feedback from works of servicing, repairs and improvements in progress

When works are being carried out to a building there are opportunities to collect important information on condition and wants of repair at a fraction of what, in time and money, it would otherwise cost to collect this information separately. If surveyors are present at a building to supervise repairs or improvements the opportunity exists to carry out condition surveys to other parts of the building.

When service contracts are drawn up, it may be advisable to insert a requirement for a written checklist or report on the condition of the element being serviced, for example, boilers, heating and ventilating systems, lifts, etc., and any likely breakdown or work required within the next two or three years. For larger property estates it is beneficial to create and maintain an 'asset register' of such items which can include manufacture, type, service history, etc. Such a register is often built by the contractor as part of their maintenance regime and is thus not necessarily a separate exercise. Modern techniques can include bar-coding of plant and equipment (or any asset thought worthy of recording) that can be read by hand-held reading devices (similar to the checkout technology used in supermarkets) and a service history can be recalled.

2.1.6 Relevant legal requirements either from statute law or from lease and rent agreements and repair covenants

Statutory standards

Consideration must be given to continuing compliance with statutory legal requirements and standards when planning maintenance works. The main areas affected relate to health and safety generally in relation to premises use; health and safety while any building works are carried out in occupied premises; waste disposal and environmental nuisances; and minimum statutory standards for dwelling. Compliance issues that are particularly relevant cover the following areas: lifts; electrical services; gas services; water services (including legionella control measures); asbestos; and pressure vessels (including pressurisation units), to name but a few. Also, the COSHH and CDM Regulations may be particularly pertinent to maintenance works, as are safe systems of work, as previously noted.

Statutes such as the *Landlord and Tenant Acts* may have an impact on the management of maintenance and repairs, and arranging for tendering, authorising and payment of any such works.

Civil legal arrangements

In the case of tenanted or leased premises, before any repairs are undertaken it is essential that the repair responsibilities, access arrangements and occupier notification are checked against any lease or rental agreement to ensure their validity. Failure to do so could result in recrimination and even legal action by aggrieved parties. Additionally, if the work is being funded through a service charge, checks should be made as to whether there are sufficient funds to cover the proposed works.

The existence of easements, rights of way, access for works and party wall matters also require consideration. When dealing with residential buildings a policy must be laid down to undertake the mandatory requirement of consulting lessees when proposing major maintenance works.

2.1.7 Existing building and service records

A major drawback in maintenance management is often the lack of records relating to the construction, alteration or past maintenance management of a building. Even where the records exist they may be inaccessible or in an unsuitable format. Therefore an easily accessible reference file or record of the building and its users is essential to effectively plan and carry out maintenance works.

Access to and use of proper records of a building's construction and management history can often save time and money by enabling more accurate repair specifications to be achieved with less survey and uncovering activity. However, routines to maintain and update building records must be put in place to achieve this.

Basic records should consist of built forms; drawings; details of products used, particularly any hazardous materials such as the presence of asbestos (there is a legal requirement to maintain records of all hazardous materials); an asset register and details of building users; contacts; and access times. Further records of works carried out, invoices, etc. should be kept separately so that they do not hinder access to the essential information of the basic records. The CDM Regulations, which came into effect on 31 March 1995, require the retention of health and safety files and other information necessary for the client to adequately advise the planning supervisor on all matters relating to health and safety.

On the handover of new buildings today, a comprehensive pack is signed over to the new occupier. This will typically include a health and safety file, 'as built' drawings and a full set of operation and maintenance manuals (O&Ms) for all the equipment in the building. These will provide manufacturers' recommendations for maintenance and servicing and even instruct owners how to go about cleaning the various finishes applied to the inside and outside of the building. All this will come (usually) in duplicate hard copy with back up on CDs.

2.1.8 Information technology

The rapid advances in information and communications technology (ICT) in recent years have great significance in the management of maintenance. Computer databases, either networked or stand-alone, are increasingly used to store and manipulate such information. There is a trend toward the use of hand-held computers such as palmtops, Personal Digital Assistants (PDAs),

and digital pen and tablet PC technology to capture survey data directly. These devices can then be used to download the captured data to a base PC either by docking the device using a 'docking station' or, as is increasingly popular, by using wireless technology that makes use of the mobile phone networks. When the information is downloaded into the base PC or network, by whichever method, it populates the chosen program with this new information and it is then processed as necessary.

Recent improvements in 'standard software' have also led to a far wider choice in output formats, ranging from prioritised lists of works required, to works orders, to graph and table summaries of overall expenditure, etc. Many software packages now not only perform the necessary technical tasks, but increasingly are capable of producing reports in a selection of output formats to suit the target audience.

However, ICT should always be seen as the tool of the maintenance management operation and should not, by its configuration, dictate the maintenance management structure. Indeed, ICT is a strategic issue and should not be considered in isolation. This is particularly important when considering the adoption of a proprietary package of maintenance management software that may or may not have the flexibility to adapt to the particular management needs of the purchasing organisation. A good approach is to define both the current and future desired information needs. There is a growing trend towards the use of standard application software that benefits from economies of scale and learning capabilities. There is no shortage of such systems on the market now, and this means that the need to develop, commission and maintain expensive bespoke systems is largely unnecessary.

Where existing non-PC based systems are in use and still prove to work satisfactorily, there is no imperative to switch to a wholly computer-driven system in one step; instead an incremental approach starting with the basic database structure and progressively introducing other features such as laptop entry, hand-held entry and wireless transmission, etc. may be more beneficial.

2.2 Prioritising and costing the maintenance works

Once the information on the building, its condition, its use characteristics and any repairs required are known, then a clearer overall programme for costing and sequencing maintenance operations can be made.

2.2.1 Prioritising

Prioritising entails the maintenance manager exercising a qualitative judgment on the urgency or criticality of the wants of repairs and servicing requirements, and then ranking these requirements in order of importance. Methods of prioritising planned maintenance and day-to-day repairs have already been outlined. In general terms, the criteria for prioritisation are:

- Will the want of repair get worse, and if so how quickly?
- Where is the repair needed, and is this an important area of the building from a user perspective?
- Are there any statutory or civil requirements which affect the repair prioritisation?

It is necessary to effectively target resources to address the more important needs, since it is only rarely economically possible to undertake every single

want of repair. This will be determined by the overall standards and maintenance policy of the owner or user; the requirements of statutory law; the terms of any lease or rental agreement; and available finance.

The usual model that is followed is the preparation of any annualised list of required repairs with estimated costs. The typical time-scale for such programmes is five years, with any outstanding repairs being carried from year to year.

Alternatively the repairs can be ranked in order of priority, with notional time-scales attached. This will ensure that whatever the availability or otherwise of finance, repairs will be carried out strictly in the order of urgency. Furthermore, any slippage or advance in the programme's time-scale due to variable funding will be apparent without requiring a restructuring of the programme year by year.

It should be noted that buildings will require a certain level of maintenance whatever the economic situation. To defer maintenance purely on the basis that 'things will get better in the future' may be a false economy. Small repairs required now will only become a bigger issue over time, and the likely costs at various points in time should be subject to analysis to determine the most advantageous time to undertake the work. One must remember, however, that it may not be a simple matter of cost alone, for example a damaged front entrance portrays a poor image even if it is only cosmetic in nature.

2.2.2 Costing

When wants of repairs are identified, either from the condition survey or from day-to-day notification, the maintenance manager or surveyor should enter a spot estimate of the anticipated cost of the repair. The basis for these costs will largely be from the experience of the manager or surveyor, together with published data. For example, BCIS annually publish several price books giving maintenance costs for a variety of trades. The online data from many of these price books can be imported into estimating systems to allow them to be used when costing a maintenance contract.

Maintenance and repair works can be difficult to cost accurately since there may be travelling and access time to take into consideration as well as the actual repair works. Furthermore, the full nature and extent of the repair may not be evident before the works are commenced.

Nevertheless, it is essential to give some indication of anticipated costs of repairs in order to keep control of expenditure. Often individual occurrences of over- or underestimates balance out within the overall budget period.

Costings for day-to-day maintenance are usually based on the anticipated volume of valid requests. This in turn is commonly based on the previous year's expenditure with an allowance for inflation being made.

To help in accurate prioritisation of the day-to-day budget, a daily, weekly or monthly allowance can be set to measure out the available resources over the whole of the year. The allowance should be based on historical spend profiles, taking into account known changes of peak usage, weather conditions, etc. This ensures that the budget is not overspent towards the end of the financial year.

The allowance can be used as a measure of how much work should be scheduled in each period. If for any reason (usually expenditure on unplanned repairs and the like) the allowance nears depletion, only the more urgent repair

requests would be undertaken. If the allowance is in surplus, lower-priority works may be brought forward and undertaken. The allowance may need to be higher at certain times of the year to account for repairs generated by severe weather or frost, for example.

2.3 Presenting the maintenance requirements

The final stage before implementation is concerned with presenting the maintenance programme in a clear and effective manner. This presentation should be directed at the clients (whether they are the building owners or users) and in a format which can be understood by non-technical people. Again there are numerous software packages on the market that can process and manipulate complex technical data into simple graphical representations that can be understood by the less technically minded.

Since building maintenance and servicing operations are often seen as low key, there may be reluctance on the part of the client to commit resources to them in the face of other, more visible, competing demands for resources within the client organisation. Accurate, detailed and well-presented maintenance plans and budget estimates are therefore essential in presenting an effective case for the maintenance budget.

Maintenance plans need to incorporate some flexibility in budgeting in case resources become more restricted or more available during the course of the maintenance plan. However, the likely consequences of expanding or curtailing maintenance budgets should be presented clearly to the client. This may indicate an increased risk of disruption to building use due to breakdowns if planned maintenance is cut back, or to any anticipated decline or improvement in the overall standard of the building and its probable effect on rents, asset value or saleability. It may be counterproductive to be too alarmist in stating maintenance needs to secure a budget, as any such claims that turn out to be unsupported by events are unlikely to be taken seriously in future budget rounds.

Presentation formats should be visual or graphical wherever possible. This will ensure easier assimilation and understanding of the overall trends in the maintenance planning. Presenting too much detail, for example, of individual repair requirements, is likely to confuse and dismay clients. The presentation will therefore involve a simplification of the details in which the maintenance programme has been prepared.

2.3.1 Resourcing the identification, prioritisation and presentation operations

It is important to devote sufficient resources and expertise to generate clear and accurate information when carrying out the identification, prioritisation and presentation operations. However, many building users and owners are tempted to minimise expenditure on professional fees or expenses in carrying out this process. Therefore it is necessary to emphasise to them that minimising expenditure may turn out to be a false economy.

Notional 'savings' made by using inadequate or incorrect information gathered by under-trained or under-qualified staff will lead to a much greater waste or misdirection of resources spent on inaccurately specified or unnecessary maintenance works. It may also lead to inconvenience and disruptions to the users of the buildings and to unplanned and unexpected expenditure on maintenance in the future.

From the owners' or users' point of view the main outcome of the identification and prioritisation process will be a costed list of works required. They will not usually be able to distinguish whether these are accurate or not. This is particularly the case where contract surveyors have been employed who have no real interest in the final outcome or where a series of surveyors/practices are employed. 'Ownership' of the reports is essential and should preferably be undertaken by a single surveyor or team of surveyors, dependent upon the size of the portfolio, using the same criteria, assessment process and costing parameters. Chartered surveyors must therefore emphasise to these clients the quality and accuracy of their services and how using these services will lead to more accurately targeted and effective maintenance works and a better-managed building at less overall cost.

In the past, grants have been made available by individual organisations and central and local government. Listed buildings may also be eligible for grants from the Heritage Lottery Fund, English Heritage and/or the local authority for essential repair work. It is well worth checking what grants are available and the criteria for the award. What's on offer is forever changing, and the popularity of introducing anything to do with 'renewable energy' for example, may well attract subsidies and benefits in the future.

3 Budgeting and funding the works

3.1 Budgeting the works

Finance for the maintenance of buildings and plant is normally obtained from the revenue accounts of a business (i.e. the money earned as profits from its core business). Therefore the amount of money available for maintenance expenditure is directly related to the performance of a business and in times of falling returns there may be a reduced amount of money available for maintenance, so the budget gets 'squeezed'.

In setting up a budget the basic information is taken from the condition survey and in particular from the prioritised schemes of work. These schemes, identified into budget periods (usually years) are the starting point in determining how much money is required in each of the forthcoming budget periods.

This information, taken straight from the survey report, is likely to show 'highs and lows', for example, years of excess expenditure and years of low expenditure. It is often worthwhile, if not essential, to then try and even out the budget expenditure to produce a more or less constant line on a cost/time graph to assist this process. It is useful to remember that at the survey and estimating stage no allowance will have been made for inflation over the years and it is essential to make due allowance for value added tax and professional fees (if these have not been previously included). This process may involve reprioritising certain aspects of the works or alternatively producing a full explanation for the years of high expenditure.

To be fully effective the maintenance budget requires knowledge of the maintenance policy and strategy of the company. In particular it is necessary to take into account the reason why the survey was implemented. The budget is essentially a management tool in the same manner as any set of management accounts; they are used by management to set and monitor targets and performance, not simply of the buildings and plant but of the business as a whole. Therefore it is important that surveyors understand the relevance of maintenance budgets within the company, and for their survey data to be overlaid with the overall business requirements of the company.

A well-researched and prepared budget will aid management in its functions, and the professional skills involved in its preparation are consequently held with due regard. A budget prepared merely on the grounds of constructional condition or performance may not go far enough to serve its purpose. Surveyors charged with the preparation or control of budgets, whether in-house or on a consultancy basis, need to acquire the skills to investigate and obtain all the relevant information.

Planned maintenance has been criticised for resulting in over-maintenance; when plans and budgets are adhered to without reinspection and revision. Maintenance budgets and programmes do require detailed review. Each annual budget should be flexible and reviewed after six months, and each long-term budget (for example, for a five-year period) should be reviewed each year. This involves a review of the anticipated deterioration in an element of structure

and the need to establish whether the previously anticipated repair programme is still relevant. Should the need arise, the programme can then be adjusted accordingly. This should also include a review of the maintenance strategy and company policy in the light of the company's performance.

Budgets prepared over the long term require flexibility and a carry-over facility. Budgeting over several individual annual periods can lead to organisations spending vast sums at the end of the financial year. This is borne out by the fear that if the budget is not fully expended, management will assume that the budget was wrong and will regard each subsequent budget with suspicion. A budget prepared over, say, a five-year period with flexibility between years has a smoothing effect on this irrationality of budget-period expenditure.

Therefore the budget should be prepared as follows:

- inspection and analysis;
- prioritisation of individual repairs/replacements;
- collation of work schemes;
- reprioritisation of work schemes;
- coordination with company maintenance policy; and
- planning of all repairs/replacement over an extended period.

The act of budgeting involves:

- constant checking and review of performance against proposals;
- periodic review of condition and programme; and
- flexibility over an extended period.

3.2 Funding the works

Much of this work may be wasted unless there is an appreciation of the purpose of the report and the way in which the works are to be funded. Indeed, it may often be necessary for the surveyor to have an appreciation of the methods of funding and the tax implications involved.

Often it may be more economical for a company to carry out minor or non-urgent maintenance work on a programmed basis but to wait until the element has reached the end of its useful life before completely replacing the item. A 'run to failure' policy is not uncommon and with certain elements of structure and plant may be perfectly acceptable. Surveyors and managers need to assess the risks of failure against the financial problems incurred in early repair/replacement (i.e. the cost of replacement at the end of a (foreshortened) life compared with life cycle maintenance). Conversely, if the service is critical or reactive repairs are individually expensive in cost or inconvenience, some companies will operate a programmed replacement (for example, of light tubes, where the cost of access towers is proportionally expensive to replace one rather than all).

The tax situation in this event should be no different to annual or regular expenditure on maintenance.

A tenant who has in mind the settlement of a dilapidation claim by a negotiated financial settlement may not be interested in a programme of repair and the effect on the reversionary interests must be taken into account.

A landlord may need the information in order to set and establish service charges that require prior notification to the lessee. Prioritisation of work

schemes in these situations takes on a different importance and budgets will certainly need all relevant tax and fees to be included.

As noted previously, the finance for maintenance usually comes from the revenue accounts. These accounts will normally be reviewed and revised on a quarterly basis, hence there is the need to review the maintenance budgets to the same extent. Funding may therefore only be authorised over short periods and so the budget prioritisation will need to take this into account, together with any weather or seasonal implications.

3.3 Fixed-cost maintenance

As a result of the fluctuating nature of the revenue accounts, some companies have looked into fixed-cost maintenance. There are two basic alternatives:

- deferring the cost over a number of years; and
- deferring the financial risk by subcontracting works on a fixed-cost basis.

3.3.1 Deferment of costs over a number of years

With a properly prepared maintenance plan that has been costed and prioritised it is possible for management to assess the implications of carrying out all the recommended works in year one. This ensures that the buildings and plant will remain relatively maintenance free over a predictable period. Funding the works is via a loan over that same period.

While this will not remove all maintenance expenditure (as there will always be matters such as vandalism or unexplained breakdown), the method can be used to good effect in certain circumstances and can help to reduce long-term maintenance costs. Also loans for business purposes attract tax relief.

The opposite situation, where a company decides to spend nothing on maintenance for a period but then spends a large sum at the end of that period, is similar. (This is often the situation which lessees of buildings use, either by choice or by compulsion.) However, this method is less precise at the commencement of the period due to the vagaries of inflation and building costs.

In either of these cases the likelihood of an element of 'improvement' to the building is something which the tax authorities may investigate. The expenditure of large sums in one year, compared with a lesser sum in each of the preceding or following years, may signify expenditure on building improvement rather than repairs. The former is not eligible for annual tax relief. Often the deciding factor will be whether the value of the asset has been increased or whether the words 'improvement' or 'alteration' have been used on the invoice.

3.3.2 Deferment of financial risk by subcontracting works on a fixed-cost basis

Influence from Europe has persuaded some companies to subcontract out a fixed-cost maintenance system.

Starting with periodic preventive maintenance plus the provision of a breakdown service gives a relatively simple maintenance contract. Couple this with the responsibility for running and operating the building and plant as well as external supervision and there is the beginning of technical services management.

Under such a system a subcontracting company undertakes all the responsibility for maintenance, servicing and replacement of structures and plant at a pre-determined annual cost. Typical service contracts of this type range up to ten years in length, although they are more typically in the order of three to five years, often with the option to extend in one-year increments dependent upon satisfactory performance during the former years.

Such a takeover of the facilities management has a pre-determined fixed-cost benefit for a company and for the subcontractor (who becomes more involved in the buildings on the estate on a long-term basis rather than on a call-out basis). This, in theory, results in better expenditure on maintenance and low risk for the building occupier. As mentioned elsewhere in this guidance note, PFI/PPP projects have the potential to create relationships that could last for something like 30 years.

The basis of the contract needs careful evaluation, and the performance specification needs careful preparation as each building will be different. The inspection and preparation of the maintenance plan will, however, follow similar lines to that recommended earlier.

In Europe and the USA such contracts are commonplace in office developments, hospitals and clinics, leisure centres, shopping malls and major public buildings (including airports).

Such fixed-cost maintenance combines financial and technical discipline backed by financial and technical resources and can be particularly attractive to large public sector estates. The approach can free up management time and resources to concentrate on the organisation's core business in the knowledge that the majority of its fixed assets will be maintained and/or replaced to a pre-determined fixed annual cost.

In these instances the tax situation is arguably simplified as the contract cost of maintenance could be entirely deductible (and this will include the professional element of the contract).

3.4 Private Finance Initiatives and Public Private Partnership schemes

The concept for this type of scheme can be traced back to government proposals in 1992. They are vehicles for encouraging private finance and management expertise into the public sector to achieve value for money and the most effective use of resources. Whether or not this has been achieved is still open to debate, but this is not the place to further that discussion. As well as producing new facilities and buildings, these schemes also include urban regeneration projects which could encompass building maintenance.

A typical project of this type would involve a construction company building a facility (say, a school) and then providing the maintenance (among other operational services) for an agreed period (up to 25 or 30 years is not unusual). The company involved would have 'won' the contract on the basis of the whole life cost of the scheme and not just the construction cost in isolation. The running costs (including maintenance) over this sort of period will substantially outweigh the construction costs alone, so care must be taken when choosing a maintenance strategy and combining it with the inevitable programme of periodic replacements.

Life expectancies of different building components and materials have been the subject of much research recently, and publications on this subject are included in the reading list at the end of the guidance note.

4 Maintenance procurement

4.1 European directive

With the opening up of trade between European countries, it has been decided that individual countries cannot become a 'closed shop' when it comes to their public bodies procuring goods and services over a certain value. For public projects (and private projects with 50 per cent or more public funding) it is now a ruling that such projects should be offered to companies not just in the home country, but to the EU as a whole.

Invitation to tender for these projects can be either 'open' or 'restricted'. 'Restricted' means that those applying must meet certain criteria which will prove their ability to undertake the contract sought. Bodies that must follow this process, as detailed in The European Public Contracts Directive (2004/18/EC) include (amongst others): government departments, local authorities, NHS authorities and trusts.

The cost thresholds vary with the type of goods, services, or work on offer, and these can be found on the Official Journal of the European Union (OJEU) website (see below). The current thresholds came in on 1 January 2008. These thresholds will be subject to change over time, and the current levels are provided on the webpage: <http://www.ojec.com/Thresholds.aspx>

4.2 Selection of contractor and contract methods

A comprehensive maintenance procurement plan needs to address all of the elements of building maintenance through some form of contract strategy. This may range from the employer contracting with a large number of individual specialists through to the placing of a single contract with a management contractor. The UK contracting industry offers a wide range of options and considerable flexibility. The contract strategy chosen depends on the extent to which the employer seeks detailed involvement in the task. In this part of the guidance note the procurement of the various services listed below is discussed and comments given about the various options for grouping them in managed contracts.

4.3 Maintenance services

4.3.1 Day-to-day (reactive)

Day-to-day tasks typically consist of rectifying breakages and failures. Such occurrences may have health and safety implications. They are generally low value but there may be a substantial volume of them, depending upon the overall maintenance strategy. The occupier's perception of the quality of maintenance of the building will be very sensitive to the quality of delivery of this service. It is normal to divide the likely scope of the tasks into general building and engineering trades, then contract with appropriate building or engineering contractors to provide this service on term arrangements. If an item of plant or building element is critical to the building or its use, individual agreements can be made with specialist contractors when a call-out time is set in a service level agreement.

4.3.2 Planned maintenance

Planned maintenance is the process of periodically undertaking routine tasks necessary to maintain plant (lifts, boilers, etc.) in a safe and efficient operating condition. Manufacturers schedule the frequency and nature of these tasks and this is supplemented by statutory requirements for checking where there is a health and safety dimension. It is normal to place term contracts (sometimes referred to as planned preventive maintenance or PPM contracts) for these services with a range of specialist contractors.

4.3.3 Preventive maintenance and condition-based maintenance

Preventive maintenance is generally identified by a condition assessment and is planned to take place to suit the pattern of deterioration of a building and the availability of funds for the purpose. The contract method is typically to divide the programme into a number of individual projects and contracts with suitable contractors for each. There are a number of new technologies that maintenance contractors now have at their disposal to help identify the condition of various mechanical and electrical components using non-invasive techniques. These methodologies are quicker and less disruptive than the traditional methods of 'stripping down' items such as pumps and generators to physically inspect the components within for wear, etc.

These new technologies include thermography, thermal imaging, oil and water sample analysis, vibration analysis and harmonic checking.

4.3.4 Cyclical maintenance

Cyclical maintenance is increasingly grouped with programmed maintenance (i.e. work at irregular intervals which is included within a schedule of programmed work). It includes those tasks (generally relating to building fabric rather than services) that arise in accordance with a known frequency not exceeding a few years. Examples of this include external cleaning or decorating. Cyclical maintenance may be procured under a term contract arrangement but, more commonly, will be subject to individual project contracts particularly where values are significant. As mentioned earlier, this should not be done in isolation, but should be considered and planned in advance in conjunction with any life cycle replacement programmes that are in place in order to achieve the best value-for-money solution by not maintaining items that are soon to be replaced.

4.3.5 Term or project contracts

Term contracts are those that run for a set period of time. The period depends upon the size, number and complexity of the buildings to be included in the contract. The usual term is three years, thus offsetting the contractor's initial set-up costs, and giving both parties the opportunity to settle into working with each other. It is, however, not unknown for some organisations to operate yearly contracts.

Project contracts run just for the completion of work to a single building or a collection of buildings. Alternatively the work may involve a single element, for example, re-roofing, rewiring, painting, etc.

In putting together a contract strategy a decision needs to be made between a term or a project contract.

The advantages of a term contract over a project contract are considered to be that:

- it encourages the development of a durable relationship between employer and contractor;
- once the contract is in place it is comparatively quick and simple to raise orders and administer; and
- it allows competitive tendering for a future stream of work.

The disadvantages are considered to be that:

- there is no certainty that you are obtaining the best market rate at the time the work is carried out; and
- rates for specialist works may be uncompetitive.

As a general rule of thumb project contracts should be used whenever the quality of service delivery is overwhelmingly sensitive to price fluctuations and the project value is of sufficient size to affect prices. Similarly, if the work is predominantly of a single trade, project contracts will normally show better value for money.

4.4 Selection of contractors

There is a slightly different emphasis in placing term contracts as opposed to project contracts. In the case of project contracts an employer is likely to be primarily concerned about the contractor's competence to undertake a task over the project time-scale. In the case of term contracts the relationship will be a longer one and it can be measured, not only by the technical undertaking of the work but also by other factors such as behaviour of the workmen on site, approach to complaints, response time to requests for action, etc. Further information can be obtained from BMI Special Report 193, Measured Term Contracts.

In selecting contractors, employers should carefully consider their evaluation criteria in advance and the weighting they would give to each one, and then mark contractors accordingly.

Typical issues to be considered are:

- Competence – does the contractor have the requisite skills for the task?
- Financial – is the contractor financially secure? Is the value of the contract in question of the sort of size that the contractor should be able to finance and manage? This is an important consideration especially for long-term contracts (such as those involving PFI or similar schemes). The danger is the sudden and unexpected demise of the contractor, so thought should be given to a contingency plan should a contractor become bankrupt or go into receivership/administration mid-contract.
- Insurance – does the contractor have sufficient cover for employer's liability, public liability, professional indemnity (PI), etc?
- Resources – how many suitable qualified personnel are directly employed? How much work would be subcontracted out? Is this the correct balance for the contract in question?
- Management – structure, numbers, experience.
- Method of operation – what is the proposed method for service delivery specifically under this contract? What control systems are there and what is the suggested method of reporting?

- Geographical base – where is the contractor’s operating base in relation to the properties in this contract?
- Experience elsewhere – are similar contracts being undertaken for others? Are references available?
- Subcontractors – does the contractor have a comprehensive procedure in place for the selection and vetting of subcontractors?
- Health and safety – what health and safety policies and resources are there? Does the contractor have provisions to manage the risks associated with the work?
- Environment and sustainability – does the contractor have in place a policy and systems to satisfy the latest legislation regarding these issues?
- Emergencies – what ability does the contractor have to respond quickly to emergencies and to deal with problems?
- Equal opportunities and recruitment – does the contractor have an equal opportunities policy or statement, and are they recognised by Investors in People, for example? How does the company go about recruitment and vetting of potential new recruits?
- *Transfer of Undertakings (Protection of Employment) Regulations 2006 (TUPE)* – does the contractor have experience of transferring employees to his/her workforce under the TUPE Regulations?

Regarding TUPE, it should be noted that if maintenance is to be outsourced for the first time, or if the contractor is to be changed (for whatever reason), there will probably be a cost implication connected with transferring employees between two different employers. It may also be the case that a transfer is not possible or desired by either of the parties, and under these circumstances redundancy payments may have to be factored into the equation.

Once a shortlist has been compiled using these criteria, the final selection is usually carried out by competitive tender.

There are distinct differences between methods of operation in the term contract and project contract markets. In the former, continuity of personnel is more important because the contractor gets to know working practices for a particular client and thus becomes more efficient. With a project contract there is likely to be a greater degree of subcontracting.

On the business side the different types of contract have different cash-flow implications. Hence, contractors tend to have different operating companies dealing with term contracts from those dealing with the remainder of their business.

4.5 Forms of term contract

There are a variety of forms of term contract available, each designed for a specific purpose.

4.5.1 Measured Term Contract (MTC)

Under this form of contract, a detailed schedule of priced activities forms the bidding document against which each contractor tenders an adjustment percentage. Work undertaken by the successful contractor is measured on completion and valued by reference to the tender. There is a JCT standard form of Measured Term Contract (updated February 2008) available and many

public service MTCs continue to be based upon the old PSA schedule of rates which was available for building works and also mechanical and electrical engineering. Other sources include the national schedule of rates (NSR), which covers building works, painting and decorating, and mechanical and electrical installations in buildings and housing. The rates are updated annually and computer data files are available. In addition, the annually published BCIS Building Maintenance Price Book is used by many, including local authorities, as a schedule of rates. Also the monthly and quarterly BCIS maintenance indices are often used to update many MTCs.

Similarly, the NEC (evolved from the New Engineering Contract family of contracts) has the Term Service Contract (TSC) 2005. This contract was developed by the Institution of Civil Engineers and is constructed and based around good management practice. As with other members of the NEC family, it is drafted in a simple and clear style. The TSC has been designed for use in a wide variety of situations, and is essentially a contract for a contractor to provide a service. It deals with managing and providing the 'service', as opposed to managing a 'project'. When used in the public sector it is designed to be used for all contracted-out services, whether they include a physical element or not.

4.5.2 Specialist Term Contract (STC)

The STC is directly comparable to the MTC but is defined on a narrow basis for specialist tasks such as asbestos removal, lift maintenance or single trades such as roofing, tarpaving, redecorations, etc.

4.5.3 Daywork Term Contract (DTC)

This is a similar arrangement to the MTC and the STC, but is designed for situations where a task cannot be identified and scheduled in advance and where a 'cost plus' or dayworks basis is the fairest way of reimbursing contractors. Caution needs to be given when utilising dayworks as there is no incentive for a contractor to be economical with labour resources. This type of contract should be seen as a last resort or used for tasks of high specialism and uncertainty.

4.5.4 Repair and Maintenance Contract (RMC)

There is a JCT standard form of contract to cover this type of work, the Repair and Maintenance Contract (updated September 2007). This contract is suitable where the work involves the repair and maintenance of a building, or where no independent contract administrator is to be appointed. It is not suitable for periodic repair or maintenance over a fixed term, the regular maintenance of plant, etc., or for work on a dwelling by a residential occupier.

4.5.5 Tendered Schedule Term contract

Under this arrangement, contractors tender against a priced schedule of activities as under the MTC. This schedule is then used as a basis for measuring in advance the contract price for a maintenance contract. This effectively becomes a lump-sum project contract and it has the advantage of ensuring an element of competition in the price while reducing the overall contractor selection period. Payments are measured, valued and certified as the works proceed in the conventional way. This type of contract would be used primarily

when time is short and it can reduce the overall pre-contract stage by running the design and tender stages together, based upon an approximate quantities guide.

The administration of MTCs, STCs and DTCs can be expensive if the employer chooses to check the measurement of 100 per cent of the works undertaken by contractors. For this reason, a sampling process is commonly used comprising a proportion of, say, 10 per cent to 20 per cent of orders raised. If such sampling shows a disproportionate rate of error then the sampling percentage should be increased. Sampling should be random with no prior indication given to the contractor.

Term contracts typically have a duration of between two and three years.

4.5.6 Partnering contract

Partnering is becoming increasingly used for procurement of maintenance services. According to the Construction Industry Institute,

‘Partnering is a long-term commitment between two or more organisations for the purpose of achieving specific business objectives by maximizing the effectiveness of each participant’s resources. This requires changing traditional relationships to a shared culture without regard to organisational boundaries. The relationship is based on trust, dedication to common goals, and an understanding of each other’s individual expectations and values. Expected benefits include improved efficiency and cost effectiveness, increased opportunity for innovation, and the continuous improvement of quality products and services.’

It should be noted, however, that these type of arrangements do not create a business partnership.

The Association of Consultant Architects (ACA) produces two partnering contracts:

- Term Partnering Contract, TPC 2005; and
- Project Partnering Contract, PPC 2000.

4.6 Contract contents

The contract should contain:

- the terms and conditions (see forms of contract below);
- the scope of the work;
- schedules of equipment;
- schedule of location;
- service level agreement;
- frequency of visits; and
- price and variations.

4.7 Forms of project contract

All conventional forms of construction contract can be used for project contracts including the following (which are correct at the time of going to press):

- JCT Contract for Works of a Jobbing Nature
- JCT Minor Works Contract 2005
- JCT Intermediate Form of Building Contract 2005
- JCT Standard Form of Building Contract 2005
- JCT Measured Term Contract (updated February 2008)
- JCT Management Contract 2008
- JCT Repair and Maintenance Contract (updated September 2007)
- ICE Form of Contract
- CIOB Facilities Management Contract 2008
- ACA Term Partnering Contract, TPC 2005
- ACA Project Partnering Contract, PPC 2000
- NEC Term Service Contract, TSC 2005

There are also a number of Government Contracts (GC) that cover maintenance and FM type work and these are briefly outlined below:

- GC/Works/6: General Conditions of Contract for a Daywork Term Contract 1999
- GC/Works/7: General Conditions of Contract for Measured Term Contracts 1999
- GC/Works/8: Specialist Term Contract for maintenance of equipment, general conditions, model forms and commentary 1999
- GC/Works/9: Lump sum term contract for operation, maintenance and repair of mechanical and electrical plant, equipment and installations, general conditions, model forms and commentary 1999
- GC/Works/10: General Conditions of Contract for Facilities Management 2000
- GC/Works/11: Minor works term contract, general conditions, model forms and commentary 2000

4.8 Performance measurement in maintenance contracting

Generally speaking there are two ways of specifying a maintenance contract. Firstly, the traditional way of instructing the contractor of what should be done and when to do it (input specification). In this way the client shoulders most (if not all) of the risk inasmuch that if the specifier misses something out, it is his/her fault and not the contractor's. Conversely, this methodology can also create a situation where a contractor undertakes work (and is subsequently paid) that is not necessarily required at the time, simply because of the prescriptive nature of the specification.

The alternative is the output specification. This simply tells the contractor what must be achieved, and to what standard elements should be maintained. The contractor (in the main) then decides how to achieve this, and shoulders the risk should he/she fall down on his/her obligations. For this to work effectively we need to introduce the concept of 'performance measurement'.

There is intensifying interest in the measurement of performance of the maintenance activity and of the contractors themselves. This is especially true with PFI and PPP contracts. Generally measures fall into two categories: strategic measures and service quality measures.

Strategic measures typically include:

- management fee to works cost ratio;
- cost per square metre of buildings maintained;
- cost per head of occupiers; and
- annual percentage change in expenditure.

These strategic measures are typically known as ‘benchmarks’ and they are used to assess trends and measure performance in comparison with other similar operations.

Service quality measures typically include:

- percentage of responses within specified response times (for day-to-day maintenance);
- failure rates (for plant);
- number of complaints;
- number of non-conformities with technical specifications; and
- accident ratios.

These measures may be agreed between the employer and contractor in the form of a service level agreement (SLA). These SLAs can in turn be monitored by looking at carefully chosen key performance indicators (KPIs). Of course, all these measures should be designed by the facilities manager (or their consultants) specifically to ensure that the corporate objectives of the organisation are achieved. In other words, we should concentrate on measuring and monitoring the matters that affect the issues that are most important to the organisation as a whole.

This concept can then be extended to a link with a performance payment mechanism.

4.9 Payment mechanisms

It is also increasingly popular to introduce the concept of a payment mechanism to a contract (again, especially PFI/PPP). This results in a situation where the payment (usually a monthly payment) is not automatically paid, but is linked to contractor performance (through assessing how well they performed in meeting their SLA by monitoring and assessing the KPIs) over the previous time spell. These methodologies can work in two ways. Either the contractor has a maximum earning potential and any failure in performance reduces this by an agreed increment depending on the magnitude of failure, or conversely, where the contractor has a guaranteed minimum monthly payment and can increase this by ‘outstanding’ performance by a pre-set amount on a sliding scale up to a maximum value.

In either case, the mechanism has to be well thought out and implemented as well as being agreed between the parties at tendering stage. In fact, the details of such a system should form part of the tender documentation so that potential contractors know what they are expected to achieve if appointed.

4.10 Managed contracts

There are clear trends within corporations and public bodies to concentrate on their core activities and contract out peripheral tasks such as building maintenance. These trends are accompanied by a reduction of in-house staff (both blue- and white-collar positions) and the employer's capability to manage a large number of different contracts. This encourages the grouping, or bundling, of maintenance contracts into a small number of managed packages with the management being provided by a managing contractor or agent.

Under such arrangements, the contracted-out service delivery level remains as set out above. Transactions between specialist contractors and managing contractors typically follow pre-agreed codes of practice within an 'open book' accounting environment, facilitating audit by the employer from time to time.

4.11 Flexibility in long-term contracts

With the trend towards partnering and long-term agreements, provision should be made within contracts to accommodate the contingency of changes to the contract that cannot be specified at the outset. These changes may be as a result of choice or legislation and are made in order to prevent the contract becoming fossilised.

Changes may include variations to the method of working, additional (or less work) such as the introduction of the Europe-wide working time directive that limits the hours employees can legally work (see below), or the carrying out of work to a different standard or prescribed method. For simplicity, how the (unforeseen) variations to the contract are to be paid for should also be described.

Details of the latest working time regulations and recent amendments can be found on the Department for Business Enterprise & Regulatory Reform (BERR) website (formerly the Department of Trade and Industry or DTI).

4.12 The future

For the management of property-related activities, as with many other walks of life, computerisation forms the backbone for future development and progression. Already, hand-held computers, PDAs, palmtops, digital pen and tablet PC technology, etc. (as discussed earlier in the guidance note) are being used to download, store and transfer data collected during surveys. Increasingly, in the future, networking of electronic data will enable more efficient communication between collaborative parties at a local, national and international level. We have also seen that new non-invasive and unintrusive technologies are now available to save time by removing the need for maintenance technicians to take equipment out of commission, to take it apart or strip it down, just to prove that there is indeed nothing wrong with it in the first place!

Perhaps work for the forthcoming year will in future be prioritised by the computer from predetermined criteria, i.e. what type of work should be done first, what jobs are linked to each other, etc., and the amount of money available factored in. Costs could be constantly updated with the actual cost/expenditure so that an under- or overspend could be predicted much earlier in the financial year.

A lot of time can be wasted notifying contractors of breakdowns and getting engineers to site, diagnosing the fault and then trying to organise replacement parts, etc. While systems already exist which will notify a control point of failure, one step further would be for computers to diagnose the fault and the engineer to arrive on site with the appropriate parts as a result of a call-out by the computer, a step nearer to artificial intelligence.

Other major changes look set to include the recycling of building components/materials. This has at least two benefits in addition to cost savings. Firstly, it will help us become more sustainable by removing the need to keep finding and consuming new resources, and secondly, it will reduce the amount of material we send to landfill (and paying the accompanying landfill tax). This will also lead to complete assemblies, rather than individual components, being replaced and consequently significant savings may be made through the refurbishment and reuse/recycling of the originals for further/continued use.

Appendix A: Current legislation applicable to maintenance

This list is not exhaustive, but lists the more significant items of legislation that will have an influence over maintenance strategy, policy, operations, and its management. They are correct at the time of going to press.

Health and safety legislation

Health and Safety at Work Act 1974

Electricity at Work Regulations 1989

Manual Handling Operations Regulations 1992

The Notification of Cooling Towers and Evaporative Condenser Regulations 1992

Reporting of Injuries, Diseases and Dangerous Occurrence Regulations 1995

Health and Safety (Safety Signs and Signals) Regulations 1996

HSG65 'Successful health and safety management' 1997

The Management of Health and Safety at Work Regulations 1999

Control of Substances Hazardous to Health Regulations 2002

The Personal Protective Equipment Regulations 2002

Regulatory Reform (Fire Safety) Order 2005

Control of Asbestos Regulations 2006

The Management of Asbestos in Non-Domestic Premises 2006

The Work at Height Regulations 2007

Environmental

Environmental Protection Act 1990

Clean Air Act 1993

Climate Change Levy (General) Regulations 2001

General

Shops, Offices and Railway Premises Act 1963

Town and Country Planning Act 1990

Party Wall, etc. Act 1996

Landlord and Tenant Act 2004

The European Public Contracts Directive 2004/18/EC (OJEU Notice)

Disability Discrimination Act 2005

Transfer of Undertaking (Protection of Employment) Regulations 2006

Construction (Design and Management) Regulations 2007

Corporate Manslaughter and Corporate Homicide Act 2007

Building Regulations 2008

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Building maintenance: strategy, planning and procurement

Building maintenance has for many years been regarded as the 'Cinderella' of the building industry, with little attention paid to innovation and 'free thinking' in the delivery of its service. However, it should be pointed out that building maintenance is not only key to sustaining the built environment. Its value in terms of employment and expenditure in the economy is equally significant.

In monetary terms, it is estimated by RICS Building Cost Information Service (BCIS), that the total expenditure on maintenance in 2006 was over £70bn (5.4 per cent of Gross Domestic Product (GDP)). Recent years have seen a significant turnaround in the total workload for the new build sector as more and more clients become aware of the need to consider the whole life cost of a building rather than simply the initial capital expenditure. This has resulted in maintenance being seen as an area of work with a consistent, if not major, workload. The major contractors have set up not only small works divisions, but also separate maintenance companies to provide a quality service to one-off clients and major property owners with their continuing need for regular day-to-day repairs. Facilities maintenance companies are also increasingly seeing maintenance as the 'core' component of their service provision.

This guidance note deals with the strategic and procedural matters that need to be considered when carrying out such building maintenance works.

Part 1 addresses the need for, and formulation of, a maintenance strategy and a maintenance policy.

Part 2 looks in more detail at the works, addressing issues relating to the identification and prioritising of current and uncompleted maintenance work of an individual property, or a portfolio of properties

Part 3 considers the different methods of funding maintenance works.

Part 4 deals with procurement, the selection of the contractor and the form of contract to be used.



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