

**“AN INVESTIGATION INTO THE MAINTENANCE  
POLICIES  
OF HISTORIC BUILDINGS IN NAIROBI”**

**BY**

**MAINA RUHARA DANIEL GEORGE**

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**UNIVERSITY OF NAIROBI**

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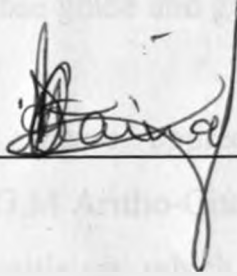


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## DECLARATION

I, MAINA RUHARA DANIEL GEORGE, hereby declare that this project is my original work and has not been presented for a degree in any other University

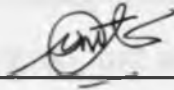
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## DECLARATION OF SUPERVISOR

This project has been submitted for examination with my approval as a University Supervisor.

SIGNED: \_\_\_\_\_



MR. G. M. ARITHO-GITONGA

## ACKNOWLEDGEMENTS

I wish to acknowledge the all those who assisted me in one way or the another, and without whose help this research work would not have been possible.

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And to my classmates and friends in both the Departmentss of Land Development and Building Economics and Management, I thank you for your co-operation and companionship that ypu have extended to me. May you all make it out there.

GOD BLESS!

D.G RUHARA MAINA

JULY 1997

Intro

## **ABSTRACT**

Maintenance of historic buildings and monuments is an important part of their conservation, which is in turn, of great significance to the preservation of a nations cultural heritage.

This study is thus an evaluation of the maintenance procedures that historic buildings are subjected to in order that their eventual conservation may be realized. it also looks at the government policy towards the mintenance and conservation of historic buildings and monuments.

The study is presented in four chapters. The first chapter consists of a general introduction to the study and formulation and identification of the problem. The second chapter is a presentation of reviewed literature which concerns issues relating to maintenance and conservation.

The third chapter deals with the field findings, analysis and presentation of data collected. The analysis of data is in a descriptive form and where data is quantifiable, use of tables has been employed. The final chapter is devoted to conclusions drawn by the study, and recommendations suggesting further areas of research.

The study basically centres around historic buildings in Nairobi's central business area, and this is hoped to reflect a nationwide view.

## DEDICATION

I dedicate this project to my dear parents, Mr. D.P MAINA RUHARA, and Mrs. A.N. MAINA without whose love and guidance I would not be what I am today, and also to my loving brothers RICHARD and EPHRAIM, and sisters CHRISTINE and WANJIKU.

I LOVE YOU ALL

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# CHAPTER 1

## 1.1 INTRODUCTION

Over the last twenty years or so, cities all over the world have experienced a very rapid increase in the construction rate of high-rise buildings. This has been mainly brought about by the fast growth of economies on a world wide basis. This phenomenon has been especially marked in the Western and the Far East countries.

In Kenya, the rapid increase in construction activity has been concentrated in the urban areas. In the wake of this increased rate in the construction activity comes the urgent need for more and more urban space. The areas which are subjected to the highest rates of construction activity are the Central Business Districts of the relatively large towns including Nairobi, Nakuru, Mombasa and Kisumu.

Basically, most of the completed buildings in the central business districts are let out, or rather used as office, with the ground floors being let out as shops. There are also a few cases of the upper floors being let out as apartments. Generally, a building has the basic functions of provision of shelter, security, privacy, comfort and capital appreciation. A building is able to fulfil these functions if it is subjected to adequate and effective maintenance procedures. All buildings, in fact, all types of construction including roads, bridges, pavements and monuments require maintenance at one time or the other.

This requirement for maintenance is mainly due to the fact that construction works and materials deteriorate or wear out due to various factors including the use to which the building is put, the environment around the building (including the climatic conditions it is subjected to), the type of construction and design of the building, and the materials used in its construction.

Maintenance therefore becomes an increasingly important concept especially if the building under consideration is one which is of historic or cultural value. This is because, as Lee (1976) says, the condition and quality of buildings (which are in this case, greatly influenced by the presence or absence of effective maintenance measures) reflect the public pride or indifference, the level of prosperity in the area, social values and behaviour, and all the many influences both past and present which combine to give a community its unique character.

Therefore, the maintenance and eventual preservation of a historic building or monument should be given due consideration especially since a historic building is one which gives out to conservationists and the general public a sense of wonder, and makes them want to know about the people and culture of those who constructed it.

A historic building or monument is one that has architectural, aesthetic, historic, documentary, social, economical, archaeological and

even political, spiritual or symbolic values, though it's first impact on people is almost always emotional (Feilden; 1982).

In Kenya, the urban centres which have a rich historic and cultural heritage are the coastal towns which include Mombasa, Malindi and Lamu. These towns depict a rich Arabic influence with a touch of European influence, mainly Portuguese, here and there. Mombasa Old Town district which consists of narrow streets and old buildings is a good example. The history of these coastal towns therefore dates way back to the days of the Arabic trade with the East African coast communities.

Therefore, in comparison, towns like Nakuru and Nairobi are relatively younger having been established close to or at the turn of the century. As such, the older buildings in these interior urban centres tend to exhibit a certain colonial influence of the late 19th Century in their architectural style.

## **1.2 PROBLEM STATEMENT**

The study was concentrated around Nairobi mainly due to the fact that it is the capital city of Kenya and therefore, a study of the maintenance standards of historic buildings would give a general idea of the maintenance standards of historic buildings in the country as a whole.

Generally, in Nairobi, historic buildings are listed under two categories:

- i) Buildings of singular architectural or historic value
- ii) Buildings forming areas of environmental interest (or rather conservation areas)

Some examples of historic buildings include:-

- . Kipande House along Loita Street
- . Norfolk Hotel along Harry Thuku Road
- . McMillian Library building along Moi Avenue
- . Kenya National Archives along Moi Avenue
- . Imperial Chambers
- . Khoja Mosque along Moi Avenue
- . Elite House on Kimathi
- . Victoria House along Tom Mboya

These buildings need to be properly and adequately maintained putting into consideration their advanced ages and delicate nature. However, over the years, historic buildings worthy of consideration have been pulled down. Examples of old buildings that have been pulled down are: Nairobi House which used to be at the junction of Kenyatta Avenue and Moi Avenue, and the Desai Memorial Hall. Others have tended to be neglected, or have been subjected to inadequate maintenance procedures.

Clearly, there is a problem here. This is because, being areas of great cultural and historic value, these historic buildings require some

form of maintenance in order to preserve this cultural heritage. However, care should be taken so that the preservation/ conservation of historic buildings is not done with too much enthusiasm such that virtually all old buildings are preserved. This over enthusiastic conservation of old buildings is a wide spread practice in Great Britain to an extent where development in the form of new buildings is regarded as a destructive force in areas where there are historic buildings. In Kenya, on the other hand, conservation of historic buildings is a practice which has gained recognition only in the last twenty five years or so. As such, it is yet to gain the importance it deserves.

Maintenance and conservation of ancient buildings should therefore be treated carefully so as to create balance between conservation and development. Therefore, it is not necessary to conserve virtually all old buildings, but rather those that are of singular historic value, and those form areas of environmental interest.

The central government and other concerned authorities should thus give great priority to the maintenance, and eventually to the conservation of historic buildings and monuments, while at the same time enabling sustainable development to take place. Historic buildings generally add a historic dimension to their environment. Their future is often uncertain, but until their fate has been finally decided, they need at least minimum care if they are not to deteriorate to a point where rehabilitation or repair becomes impractical, or their historic features are lost.

### **1.3 STUDY OBJECTIVES**

1. To study the construction of and the materials used in the construction of historic buildings in Nairobi.
2. To identify the various uses to which historic buildings are put in Nairobi.
3. To identify the body or bodies that are charged with the responsibility of maintaining and conserving historic buildings.
4. To investigate and identify the problems encountered in the maintenance of these historic buildings.
5. To establish how much is spent on maintenance of these structures presently, and how much money is required to maintain them to a much more acceptable standard.
6. To make suggestions and recommendations of further areas of research to be considered in the maintenance and conservation of historic buildings and monuments.

### **1.4 HYPOTHESIS**

Historic buildings in Nairobi have been subjected to inadequate and ineffective maintenance procedures.

## **1.5 ASSUMPTION**

A historic building is one that has been in existence for more than 50 years.

## **1.6 SCOPE OF THE STUDY**

This study generally aims at looking at historic buildings in the central business district of Nairobi, and the current maintenance policies undertaken by the bodies charged with the responsibility of maintaining and conserving them.

The buildings this researcher studied were namely:

- i) The Kenya National Archives along Moi Avenue
- ii) The McMillian Library along Banda Street
- iii) Khoja Mosque along Moi Avenue
- iv) Kipande House at the corner of Loita Street and Kenyatta Avenue.

The study also looks at the problems that are encountered by the bodies that are charged with maintaining these structures, whether the problems be financial or otherwise. In relation to this, some suggestions



and recommendations have been given as to the best way to address the problems encountered.

## **1.7 SIGNIFICANCE OF STUDY**

Historic buildings and monuments help to preserve cultural and historic heritage. They serve to remind us of our rich historic past and reflect our national pride in what we have been, and what we are. Cultural properties have what could be referred to as 'emotional appeal'. This means that they invoke some form of feeling or emotion in the general public, especially those who appreciate historical artefacts.

Although Nairobi is not the oldest urban centre in Kenya, it is the capital city of Kenya. As such, in more ways than serves as a representative of the situation in the country as a whole. In other words, Nairobi is the international gateway to Kenya.

Therefore, the state and appearance of its buildings, both modern and ancient reflects the general attitude of the Kenyan population towards these structures. If the buildings are adequately maintained, then this shows that Kenyans are proud of their cultural and national heritage.

## **1.8 STUDY METHODOLOGY**

Collection of the relevant data entailed a number of methods which are the following:

- i) Data was collected through intensive literature review on relevant textbooks, journals, past research projects and workshops reports.
- ii) Data was also obtained by the use of questionnaires and oral interviews administered to the maintenance management of the respective buildings.
- iii) Lastly, data was collected by a physical survey of the historic buildings and their environment.

## CHAPTER TWO

### 2.0 LITERAURE REVIEW

#### 2.1 INTRODUCTION

Maintenance of buildings and infrastructure, and indeed the maintenance of any physical asset is a matter which must be considered before construction of the said asset starts. Each physical asset has its own characteristics and thus will have it's own maintenance requirements. While design and construction could minimize future maintenance costs, it still remains the duty of those owning physical assets as well as the managers of such assets to ensure necessary arrangements are made not only to keep the same performance standards as intended for user needs, whether this is for present and future generations.

Generally, the purpose of maintenance is to protect the capital assets from decay, from being necessary liabilities as a factor of production, and from being a source of discomfort to users when viewed from the aspect of a consumption good. Maintenance should therefore be seen as part and parcel of the process to create and use physical assets and as such, an important aspect of the resource allocation in the construction industry.

All in all, maintenance of historic buildings aims at conserving them. Conservation is actually those actions that are taken to prevent decay or deterioration of existing structures. In fact, it includes all acts (including maintenance) that prolong the life of the concerned structures.

It follows therefore that each proposed physical asset should be subject to any of the several techniques such as life cycle costing, cost effective analysis, discounted cash flows and cost benefit analysis so as to provide answers to where, when and how much maintenance costs are likely to be incurred. Whatever technique is used will depend on whether the purpose is to maximize profits, or for social benefits, or to minimize costs.

## **2.2 DEFINITIONS**

Abbot (1972), defines **maintenance** as :

“the act or process of keeping something in a proper or particular state of condition, especially keeping a property in good order, and in state of efficiency by repair. It is a continuous process which may involve repair, but requires a greater degree of attention to general upkeep than repair.”

Basically, maintenance is a set of activities or procedures undertaken to keep, restore or improve any facility, i.e. every part of the building, it's services and surrounding, and infrastructure to currently

acceptable standards, and to sustain the use and value. It is meant to keep the facility in a state or condition that is fully functional, thereby extending its useful life and improving its efficiency.

A **historic building** is basically one that gives a sense of wonder to the general public. It has aesthetic, architectural and historic values and generally forms part of a conservation area.

Reynold (1976) defines **conservation** as the making of the best use of resources embodied in these elements including maintenance in a good state of repair, and in some cases, maintaining other features as well, such as characteristics of the activities which take place within the buildings, both social and technical. Otherwise, conservation is the professional care of existing structures and buildings in order that they might continue existing, serving a useful purpose.

### **2.3 ROLE OF HISTORIC BUILDINGS**

Feilden (1982) says that historic buildings are a 'laboratory' experience. This means that they can teach architects and engineers how buildings are used and abused, how they react to their environment, and where design might have improved, mainly because the passage of time causes otherwise unseen faults to become obvious. A historic building usually is one that, for various reasons including aesthetic and

emotional appeal, society has decided shall be conserved for as long as possible.

In Australia, the Trust Committee uses the following criteria for listing historic buildings. They list buildings and structures that are:

- . well designed and/or well built;
- . fine examples of an architectural style;
- . given importance by their setting;
- . a clear illustration of a way of life or process that is no longer practised
- . strongly associated with an important historical development or figure;
- . very unusual

In short, historic buildings, whether listed or unlisted, are structures which add a historic dimension to their environment and are often for a variety of reasons, at risk of deterioration and decay.

## **2.4 MAINTENANCE PRACTICE**

### **2.4.1 MAINTENANCE STRATEGY**

If maintenance were carried out, there would be far less repairs and renewals. This policy can only be made to work on a basis of regular inspections.

Generally, buildings are expected to last for a very long time. In fact, historic buildings are actually expected to last 'for ever' ('for ever' here means 'for as long as it is wanted'). On the other hand, electrical and mechanical services usually have a safe life of about 20 years. Therefore, the skilful installation of up-to-date services in historic buildings should be given due consideration.

Secondly, the whole building can be considered as an 'environmental spatial system'. Here, the internal environment can easily be measured, so any changes should be carefully considered. Moreover, improvements which alter the environmental balance may in themselves bring about new causes of decay. For instance, ancient building construction 'breathes' i.e. allows the easy passage of moisture vapour, and this is prevented by the use of new and impervious materials such as Portland cement.

Also, old buildings are much more vulnerable to damage from penetrating rain and rising damp and must therefore be protected. The introduction of such things as vapour checks must thus be carefully

considered in the full context of the buildings environmental system. Installations such as the central heating and air conditioning which alter the environmental balance substantially should be introduced only gradually.

Thirdly, old buildings need continuous and constant supervision and maintenance. Preventive maintenance should therefore be part of the planned strategic program. Preventive maintenance includes such things as reducing traffic vibration and air pollution through the application of town planning controls. As it protects the historic building without any direct intervention, preventive maintenance is the highest form of conservation activity (Feilden;1982).

#### **2.4.2 ECONOMICS OF BUILDING MAINTENANCE**

Basically, as Syagga (1985) says, the economics of building maintenance attempts to determine the use of resources available for maintenance so as to protect buildings as capital assets from decay, from being necessary liabilities as a factor of production, and from being a resource of discomfort to the occupant, when viewed from the aspect of a consumption field.

Assuming that the purpose of maintenance is to preserve the structure of the building during its economic life, it is reasonable to assume that the total amount of expenditure on maintenance should



equal the capital expenditure at the time of the demise of the building, so that:

$$C = M + S$$

where C is the initial capital cost;

M is the sum of discounted values of annual maintenance;

S is the salvage value of the building.

(Source: Syagga P.M - Impact of Building Design of Maintenance Costs of Residential Housing Estate owned by Mombasa Municipality).

### **CONCEPT OF OBSOLESENCE**

Depreciation is economic effect that is brought about by either physical deterioration, functional obsolescence, economic obsolescence, or a combination of all these. Physical deterioration contribution and most properties suffer their greatest loss in value from effects of obsolescence.

“Obsolescence is a loss in value for reasons other than physical deterioration. The test of obsolescence is whether or not local demand is sufficiently strong to warrant the cost of reconstruction of a property if it were to be destroyed and then rebuilt with the same design and quality of construction. If market conditions do not warrant such rebuilding, the property is subject to some form of value reducing obsolescence.”

**(S.A Kahn and F.E Case - Real Estate Appraisal & Investment - 1977)**

This means that reconstruction or maintenance may not necessarily improve the demand for services of a house that suffers from obsolescence. Such actions will merely restore physical depreciation. Value reducing obsolescence may be either physical functional or economic.

Physical obsolescence is easy to determine and relates to the wear-and-tear on the fabric of the building. Usually, physical obsolescence is not a severe problem for a building. It becomes increasingly important as the building gets older: As an average, it is estimated that the physical life of a building is generally two or three times as long as its economic life.

Functional obsolescence is the loss in value arising from decreased utility, inadequacy, incapacity or changes in the architectural style which are inherent in the structure itself. It is a deficiency in design, equipment or layout that makes a building less suitable for use than the general sum of its contemporaries. The building may be an over-improvement or under-improvement; the equipment may be outdated or unusable; the rooms too squeezed; the ceiling too high; the light inadequate or the architectural plan, style and design may be poor. Thus the building components and items inherent in its structure are in one

way or the other responsible for a decreased demand or value of a property.

For a building's design to be acceptable, it has to satisfy the following elements or human needs:

- i) Requirements of use i.e. the building must be comfortable, safe and durable.
- ii) Requirement of appearance which must be accepted in terms of culture, religion or defence.
- iii) Requirement for ease and economy i.e. the design must relate to an overall financial commitment throughout the life of the building.

Economic obsolescence arises where there is a loss in the usefulness of a building because of changes in the market for its services, for instance a drop in demand. Economic obsolescence is not always permanent, it can disappear as quickly as it appears. The causes of economic obsolescence lies deep within the economy as a whole, and as such skill is required in forecasting its consequences so that building plans are correctly oriented.

### **2.4.3 REASONS FOR MAINTENANCE**

Maintenance *per se* is a process by which a building is kept viable for the benefit of its users. With historic buildings, properly executed maintenance is in the interests of the general public. The desirable

standard of maintenance depends upon the intensity of the climatic conditions of rain, frost, high temperatures, etc., and other causes of decay, as well as upon the needs of the users.

Maintenance of historic buildings must have the support of owners and occupants. This is the simplest way of ensuring its conservation, as under constant supervision, defects are more likely to be remedied as quickly as they occur. A policy of preventive maintenance and preservation procedures is less expensive than neglecting the building with the hope that defects or component failure will not occur, and then this is followed by extreme measures such as rehabilitation or emergency repairs.

Human nature, being what it is, means that the latter procedure is all too common, leading to wastage of necessary resources. In addition to this, the more sophisticated the buildings design or style is, the more essential it is to organize maintenance and therefore, the more difficult it is to carry out alterations without the danger of collapse.

#### **2.4.4 MAINTENANCE MANAGEMENT SYSTEMS**

In general, maintenance management systems consists of a series of techniques for planning, organizing, directing, controlling, monitoring, evaluating and reporting on activities, to ensure maximum program effectiveness at minimum cost. It is not a set of new technical

procedures for performing maintenance tasks in a better way, but a means of getting organized so that the correct activities are scheduled and performed at the right time and in an efficient and cost effective manner.

The functions in this area are mainly of a technical nature and are concerned with the planning and control of construction resources to ensure their necessary repairs and renewals are carried out with the maximum efficiency and economy.

Decisions relate to determining standards whereby it is necessary to have information on the overall objective of the organization and of statutory and other external requirements so that compatible standards can be fixed. The expression of these standards in both qualitative and quantitative terms demands knowledge of the effects of varying degrees of disrepair on user activities and levels of visual acceptance.

In addition to this, inspections should be planned, whereby the periodicity of inspections is fixed. It requires knowledge of the rates deterioration of the building so that defects are revealed before they have reached a critical stage. The minimum period will be determined by the inspection costs which should clearly not exceed the cost consequences of failure.

The necessary work should also be identified and specified. This is achieved by comparing the information received on the condition of the building from inspections, surveyors and other sources with the standards laid down. It requires knowledge of the causes of defects and

of the remedial measures which would be appropriate in the circumstances. The cost of the work to be done should be estimated and set out on worksheets. The estimates should be based on historic cost data obtained from within the organization from previous similar jobs.

The work should then be planned. This involves fixing appropriate start and finish times for the individual jobs and requires information on the effect that the timing of the work has on user activities, it's urgency, the availability of resources and labour required for each operation. This planning is followed by the organization of work to be done, whereby decisions are made on whether to employ labour directly for the purpose, or to engage an outside contractor.

Lastly, cost performance and quality of work done is controlled. This involves the use of formal systems for the feedback of information on progress so that actual costs and performance can be compared with those predicted and remedial action taken if necessary.

Generally, with proper maintenance management, there will be the increased reliability of tools and equipment used for maintenance. Therefore, there will be minimized service interruptions and down time, and the requirement for large repairs. There will also be the better utilisation of staff through planning and scheduling thereby leading to the increased productivity of staff, and some improvement in workers safety.

There will be accurate records on work performed and costs received, and an equipment performance. All this will lead to a more

reliable supply of parts, supplies, equipment and tools, and the effective utilization of maintenance personnel.

For a maintenance management system to be successful, it must be simple and easy to understand by those who are meant to use it. The purpose of all forms and procedures must be understood by all. The system must also be complete such that it provides periodic reliable information concerning the status of all maintenance work that is pending. All maintenance work must be planned, directed, controlled and reported on by the same system.

The system should be flexible and open to changes that will improve on it. However, all paperwork should be uniform and carefully followed. Opportunities for improvements are almost always available. In the beginning, a very basic system should be adopted, and the system expanded or improved as time goes on and the staff develops.

The management system should set out clearly the responsibilities of each member of staff. Each job should be allocated to a specific person. When a task arises, it should be clear to all which staff member has responsibility for the job. All the staff must also comply with forms and procedures and perform the tasks demanded of them within the maintenance management system.

The responsibility for the day-to-day running of the system should be decentralized such that each individual member of staff is fully responsible for the performance of the task allocated to him. The upper management and external overnight agencies must give their full

support to the allocation of human and financial resources to the maintenance management system. The top management must give the maintenance manager the authority and control over the resources required to implement the system especially in the early stages of implementation.

The maintenance manager must be a strong and able leader to ensure that all clerks, craftpersons and technicians fulfil their responsibilities under the system. The manager must motivate his staff to do good work, and he must strive to keep the work done on schedule and ensure that any necessary follow-up work is done.

Communication regarding problem notification, work orders, difficulties in completing work and maintenance reports must be rapid and efficient so that the personnel have the latest information and can respond rapidly. Lastly, the operations personnel and maintenance personnel must work together with the top management in a mutually supportive way.

#### **2.4.5 MAINTENANCE POLICY**

The objective of a maintenance policy is to preserve a building so as to secure its uninterrupted use at the users desired level of activity. This level must be carefully considered, for to achieve it will necessitate a wide range of maintenance actions - from simply preventing damage by wind and weather, to providing for intense use with sophisticated



levels of comfort and decoration together with fire and security precautions.

The desired standard of maintenance should be agreed upon with those responsible and laid down as a policy appropriate to the building. It must also be economically viable. The problems of organization of maintenance are of various types. However, whether the structure is a museum or a historic property open to the public, a cathedral or mosque, the principles are generally the same.

There should be regular inspections by the staff at specific levels according to their competence. The inspections should culminate in a fully professional inspection after a period of not less than 5 years.

A maintenance policy should therefore aim at keeping the structure in state that is fully usable, whereby the users can gain maximum utility from the structure.

#### **2.4.6 RESPONSIBILITY FOR MAINTENANCE**

The problems of organizing an effective maintenance policy depend on an intimate knowledge of the building, its contents and its functions. For an ancient building, the tasks are to present it against weathering, to remove plants and control algae and moss, to prevent it carefully and meaningfully to visitors, and to prevent vandalism or theft by providing uniformed supervision.

For an abandoned building, care should be taken to prevent it from adverse effects of weather, to protect it against vandalism, and to use it for special occasions. For a house, basic tasks include keeping it wind weather tight, to repair any broken down services and to repair it every 5 years.

Although the cost of maintaining and conserving a historic building may seem a burden, it is the duty of owners, trustees and users to see that the building is handed on to the next generation in good condition. In fact, when compared with the replacement cost of the building in question, the cost of maintenance does not seem so unreasonable. This cost is so low when compared with the 2% of capital cost which modern construction requires. In addition to this, the older a historic building is, the more valuable it becomes as an artefact.

The amount of finance available is an important point to consider because it has a substantial influence in determining the acceptable standard. This standard should be explained to, and agreed with the owners or trustees of the historic building, as it determines the amount of work necessary. Maintenance expenditure can often too easily be postponed without immediate loss or harm, but such a course will lead to unnecessary deterioration and depreciation.

Expenditure on maintenance beyond those things dictated by relevant technical and economic considerations may be wasteful, although high standards of maintenance can, and generally do have a significant beneficial influence on the attitudes of the users. However,

over its life, and depending upon its use, the acceptable standard for a building can alter, and this will affect the amount of maintenance work that is required.

Efficiency and effectiveness in the execution of maintenance work is greatly influenced by correct diagnosis of defects and deficiencies, and this is followed by the application of effective remedies. This should be performed with good workmanship, and controlled by good management.

Maintenance is divided mainly into planned and unpredictable work. The former includes planned and corrective maintenance, while the latter consists mainly of emergency maintenance. The less of emergency repair, the better the maintenance plan.

For ease of forecasting preventive maintenance plans, the property owners and managers should develop effective maintenance management accounting system, and acquire adequate resources and data.

Majority of buildings provide shelter for people whose wants and needs must be understood and taken into consideration. In fact, the maintenance management, supervisors and operatives, building owners and their occupants play active roles.

Basically, more rather than less maintenance work is necessary if the value and amenity of a cultural property is to be kept at the present level.

#### **2.4.7 SKILLS REQUIRED FOR MAINTENANCE AND CONSERVATION OF HISTORIC BUILDINGS**

Maintenance and preservation work is very skilled and needs responsible and competent personnel (who should be rated at least as technicians). However, maintenance work tends to be regarded as an inferior profession when compared with others like architecture, structural engineering and quantity surveying. Maintenance also tends to be carried out only when absolutely necessary and thus maintenance personnel are kept largely unemployed.

Building maintenance also tends to fall between several professions and is thus neglected. Generally, the architect will only be concerned with major repairs and the aesthetics of preservation, whereas the maintenance staff come into action only when something breaks down. The cleaners who look after a building always come into direct contact with every part of it, but do not know how to recognise symptoms of incipient problems or to whom they should report. In fact, some areas are neglected because no one has been allocated specific responsibility for them.

Each historic building needs a local custodian who looks around its inside and outside, in all weather conditions, and to note any defects.

If the custodian has the authority to instruct conservation craftsmen to carry out immediate repairs, then needless delays can be eliminated and costs reduced. It is however necessary to have skilled guidance for the workmen. The custodian is backed up by the cleaning staff, who are the primary trouble-stoppers, since they should see every single part of the building at regular intervals. The staff should have adequate training in spotting defects.

Most building maintenance, as is practised today, is concerned with tactics, with solving a particular problem, without considering its relationship to the building as a whole. What is required is a coordinated strategy involving the owner and users of the building, the maintenance staff and the daily cleaners, all of whom can, by constant vigilance and involvement, provide an early warning system.

#### **2.4.8 MAINTENANCE PROGRAMMING**

Having established the importance of maintenance in the care and conservation of historic buildings, the methods by which this can be implemented need consideration, and the costs likely to be incurred assessed.

Maintenance costs, which are recorded in the log book, should be divided into:-

- a) small items (basically good housekeeping)
- b) repairs to services, air conditional, electrical services and plumbing
- c) rolling program of long-term maintenance (preventive) carried out year-by-year, with some little use of scaffolding
- d) major items when in need of renewal, such as roofs, walls, windows, doors, floor coverings and services.
- e) Emergency- about 10% reserve should be allowed for contingencies.

Each of these categories should be budgeted carefully, if reductions are made, spread them evenly. A routine for the maintenance of a historic building should be laid down, and a year-by-year log book instituted with records of costs allocated according to the above ((a) to (c)). A laid down strategy will enable the establishment of reliable policies, and will ensure a constant flow of data from those with first-hand information.

The records should pinpoint weakness in design and construction, and indicate the 'cost-in-use', thus providing the architects, owners, users and maintenance personnel with valuable feedback information. A careful study of the records will reveal the frequencies of servicing and repair in the past.

With a detailed survey of the building fabric, one can produce a detailed program as the basis of future preventive work. This may have to be an elaborate document, and the clerical administration and

documentation will be considerable. Indeed, in a large operation, a computerized program is the most efficient way of looking after a group of cultural properties.

For major national historic buildings and monuments, major maintenance work is carried out every 30 years, where there is the cleaning and overhauling of the principle structural elements, and any necessary repair work is done. This will necessitate the execution of scaffolding which enables a close inspection of the building fabric to be made by professional advisors.

## **2.5 KINDS OF MAINTENANCE**

Maintenance, being what it is, i.e. a complicated, yet generally neglected task, can be carried out in different ways according to the wishes of the building's owners and the amount of funds at their disposal. In actual fact, maintenance work to be carried out is determined by the life and nature of the structure or property in question, and by the expenditure budget that has been drawn up.

### **2.5.1 REGULAR SERVICE MAINTENANCE**

This is a straight forward kind of maintenance. It includes those activities that are carried out on a daily or weekly basis such as cleaning

of floors and windows, rubbish removal, all which affect the day-to-day running of the building. With careful planning and inspection, the scope of this area can be reduced.



### **2.5.2 PERIODIC/ PLANNED MAINTENANCE**

This includes planned corrective and planned preventive maintenance:

- i) Planned corrective maintenance refers to those activities that are carried out as a result of breakdown or noticeable deterioration of the building component. It includes the making of repairs to prevent the re-occurrence of such failures. When a break down occurs, it is studied so as to determine the cause. The repairs needed are determined and are made to ensure that the failure does not occur again.
- ii) Planned preventive maintenance refers to the systematic pre-scheduled activities or programmes of inspection and maintenance activities aimed at the early detection of defects, and implementation of action to avoid breakdowns. It is 'pre-active' in the sense that the activities are conducted before a defect occurs.

### **2.5.3 LONG TERM REPLACEMENT MAINTENANCE**

This type of maintenance aims at replacing building components and equipment after they have outlived their purpose, or rather, when their economic life has ended. Most architects and engineers

generally have accurate estimates of the life of any building component. A good replacement program should be devised and maintained so that in the long run, money is saved.

#### **2.5.4 EMERGENCY / UNPLANNED MAINTENANCE**

This has been referred to as a contingency system which is based on a policy of waiting until a complaint is lodged by the users before any maintenance action is taken. It is the kind of maintenance which has not been planned as a result of the building component or equipment breaking down unexpectedly and requiring immediate service or replacement.

#### **2.5.6 REHABILITATION**

Rehabilitation involves those activities carried out to correct major defects to restore a facility to its intended operational status and capacity without significantly expanding it beyond its originally planned use. Historic buildings are normally required to remain in their original shape, style and texture. Therefore, any change in their original design will of course defeat the purpose of conservation.

Rehabilitation involves the input of a lot of work, skill and materials. It has social, cultural and economic advantages. Social advantages in that the society keeps its identity; cultural <sup>in</sup> that artistic, architectural and documentary values are preserved, and economic advantages in that:

- . existing capital is used, and energy is saved;
- . demolition costs are avoided, and
- . existing infrastructure is fully utilized.

### **2.5.7 REFURBISHMENT**

Marsh defines refurbishment as the hard-headed business of making use of what is usable in the ageing-stock; the skilful adaptation of a building shell (which is valuable in its updated version of its existing use). The existing building, once refurbished, should be equally as efficient in its new role as a purpose designed building would be, given the usual number of restraints which always impede the designer realizing the ideal in new or refurbished work alike.

Basically, refurbishment has nothing to do with maintenance although in the process of adapting a building to a revised use, maintenance will have to be carried out on the existing structure.

Modern conservationists have attached themselves to the idea of refurbishment, more so for emotional reasons than economic ones. As a result, refurbishment becomes thought of as synonymous with

conservation, where as though it enhances conservation, refurbishment is much wider in scope and is thoroughly economically motivated. Therefore, conservationists should be careful with refurbishment as it involves modification, extensions and re-styling to suit changing needs which could be a contradiction of the real purpose of conservation.

## **2.6 CONSERVATION PRACTICE**

As Feilden(1982) says, the conservation of our historic buildings demands the wise management of resources, sound judgement and a clear sense of proportion. It demends the desire and dedication of those concerned to ensure that our cultural heritage is preserved.

Conservation is enhanced by carrying out the activities of combating waste, uncontrolled expansion and exploitation of natural resources, and of reducing pollution. All these are done to preserve the historic buildings.

Historic buildings have the qualities of low energy consumption, loose fit and long life. As such, their study is relevant to modern architecture which should aim at achieving these very same qualities. From the time of it's construction, a historic building sends out "messages" both human and artistic, which are revealed by a study of history. A complexity of ideas and culture may be said to encircle a historic building and reflected in it.

A study of the historic building should include the client who commissioned it, together with his or her objectives which led to the commissioning of the project and an assessment of the success of its realization. The study should also deal with the social, political and economic aspects of the period in which the building was erected and should give a chronological sequence of events in the life of the building.

The following areas should also be studied:

- . The different phases of construction of the building complex
- . Latter interventions and alterations
- . Any internal or external peculiarities
- . The environmental context of the surrounding of the building
- . Causes of decay and its extent; through action of man and then diverse climatic and environmental effects.

Natural causes of deterioration and loss include earthquakes, volcanic eruptions, hurricanes, landslides, fires, and they are the most destructive of nature's forces. Human or man-made causes of decay need careful assessment, as they are in general the by-product of the industrial productivity that brings about wealth and enables conservationists to press the claims for conservation. These causes mainly include neglect and ignorance, and then vandalism and accidental fires.

In general, conservation embraces all acts that prolong the life of our cultural and natural heritage, the object being to present to those

who use and admire historic buildings the artistic and human messages that such buildings possess. The minimum effective action is always the best. However, this action should be reversible such that future interventions are possible.

A good conservation policy should provide guidance and procedure as on how to protect and preserve our cultural properties. It should achieve the objective of awakening the interests of the people in their common architectural values. The policy should also ensure the protection and conservation of areas of architectural or historic interest. This will ensure that cultural properties have a living role in contemporary society.

### **2.6.1 VALUE AND IMPORTANCE OF CONSERVATION**

Basically, conservation should aim at preserving and enhancing the messages and values of cultural property. These values help to systematically set overall priorities in deciding proposed interventions, as well as to establish the extent and nature of individual buildings. The assignment of priority values will inevitably reflect the cultural context of each historic building.

‘Values’ can be described as either of the following:

- i) Emotional values of wonder, identity, continuity, spiritual and symbolic values.

- ii) Cultural values such as documentary, historic, archeological, age and scarcity, aesthetic, landscape, ecological and scientific values.
- iii) Use values such as functional, economic, social and political values.

For conservation to be justified to the community at large, there should be some ethics. For instance, the condition of the building before any intervention, and all methods and materials, used during treatment must not be falseified, destried or removed. In addition to this, any intervention should be kept to a minimum and must be governed by unswearing respect for the aesthetic, historic and physical integrity of cultural property.

Note: All historic buildings should be inspected regularly at five years interval in order to establish maintenance plans. such preventive maintenance should in most cases forestall the need for major interventions, and this in turn reduces the cost of conservation of a nations stock of historic buildings and monuments.

It is natural for non-conservationists and developers to question why vast amounts of money, resources and time should be spent on conservation works. According to Cormack (1976), the main reasons for conservation include the following:

- a) Historic - on the general level, history is clearly vital to an understanding of the present and since it records and generalizes from past events relevant to the furur. For instance, artefacts from the past provide ideas and material evidence of how life

was then.

- b) Well informed conservationists will apply their knowledge of past design as a basis from which to criticize monotonous large new buildings and integrate those old designs with the new building technology to come up with better structures.
- c) Conservation maintains historic continuity by establishing a sense of security in the face of social changes.
- d) Reasons relying upon identity, associational in the context of symbolism and reference given to the product of an earlier age.

### **2.6.2 PROCEDURES IN CONSERVATION**

The initial stage is the keeping of intervention whereby an inventory of all historic and cultural property in the land is kept. These properties are categorized according to their age, use,, etc, with their details being recorded. These inventions serve as basis for allocating special grants or providing special tax relief for those who must maintain historic buildings.

There should be conducted initial inspections so as to know and define the conditions of the building as a whole. The buildings present condition must be recorded methodically and any further studies that may be necessary are reported here.



Complete recording of every detail and procedure is essential before, during and after any interventions. There must be continuing documentation in the form of analytical and critical reports. Every stage of cleaning, consolidation, reassembly and integration, including all materials and techniques used must all be recorded. Reports of the course of work should then be placed in the archives of a public institution and made available to research workers and other interested parties. This will serve to broaden general knowledge about historic properties. Future conservationists will refer to these records to know and understand what has been occurring in the past.

Conservation involves making interventions at various scales and levels of intensity which are determined by the physical condition, causes of deterioration and anticipated future environment of the cultural property under consideration.

Bearing in mind the final aim, and the principles and rules of conservation, some degrees of intervention can be identified, some of which may take place simultaneously. These include the following:

#### a) Consolidation (direct conservation)

Consolidation entails the physical addition or application of adhesive or other supportive materials into the actual fabric of the property in order to ensure its continued durability or structural integrity. consolidation of the existing material may have to be carried out. However, the integrity of the structural system must be respected and it's form preserved. As such, no historical evidence should be destroyed.

#### b) Prevention of deterioration (indirect conservation)

Basically, this involves the protection of the property by controlling it's environment, and thus preventing agents of decay from active. Neglect is prevented by sound maintenace procedures based on regular inspections. Prevention thus includes control of internal humidity, temperature and light, measures to prevent fire outbreaks, theft and vandalism, and to provide for cleaning and overall good housekeepng.

#### c) Preservation

Preservation is mainly concerned with keeping the cultural property in it's existing or original state. Repairs are carried out when necessary to prevent any further decay. Damage and deterioration caused by water, chemical agents and all types of pests and micro-organisms must be stopped in order to preserve the structure.

#### d) Rehabilitation

The best way of preserving buildings is to keep them in some form of use. This generally involves modernization with or without adaptive alteration. The original use for which the building was designed is generally the best, as it means there are fewer changes in the original construction. It is often the only way that historic and aesthetic values can be saved economically and historic buildings brought up to contemporary standards.

#### e) Restoration

the main object of restoration is to revive the original design, concept and structure of the of the cultural property. Any replacement of missing or decayed parts must integrate harmoniously with the whole building, but must be distinguishable on close inspection so as not to falsify historic or archeological evidence.

#### f) Reproduction

Reproduction actually involves the copying of any missing or even still existing artefacts so as to maintain their harmony.

## g) Reconstruction

Reconstruction may be necessitated by destruction or damage that has been brought about by fire, earthquake, war, or other natural or man-made calamities. It must be based on accurate documentation and evidence so as to be in harmony with the design of the original structure.

## **2.7 EXISTING LEGISLATION**

Kiamba (1995) says that the legal and administrative system establishes an effective regulatory and monitoring mechanism recurring the protection and preservation of the built or settled environment or separate areas of such an environment in urban centres which have been identified as of historic or architectural significance, the appearance of which is worthy of conservation.

A good conservation policy should include legal guidelines on how to keep and protect the historical facilities. Legislative listing and scheduling of cultural property gives the framework structure of conservation practice. Legal and administrative measures should ensure that man should not be allowed to injudiciously destroy such heritage whether due to ignorance on the adoption of planning and development policies which undermine the protection and preservation of our heritage.

In Kenya, conservation is a relatively new concern especially as far as historic buildings and monuments are concerned. The first serious efforts towards conservation were made by the government in 1972. the areas of interest were the old towns of Mombasa and Lamu.

The enactment of the Antiquities and Monuments Act cap 215, the National Museums Act Cap 216 and the McMillian Memorial Library Act Cap 217 of the Laws of Kenya indicated the seriousness the government attached towards the conservation of the countrie's cultural heritage.

The Antiquities and Monuments Act Cap 215 basically provides for the preservation of antiquities and monuments and lays down penalties for anyone found guilty of wilfully destroying or damaging an antiquity or protected object. The National Museums Act Cap 216 basically provides for the establishment of the National Museum Board which is the overall authority on conservation areas in Kenya. The McMillian Memorial Library Act actually establishes the McMillian Memorial Library as a chritable trust.

Following the enatment of these acts was the gazetting of several historic buildings as monuments including Mombasa and Lamu old towns in 1986 and 1990 respectively, Kipande House, Kenya National Archives, McMillian Library, High Court buildings in 1985. others are still on the waiting list.

As far as maintenance is concerned, there is no co-ordinated legislation. There is no single legislation that lays down the stardards of

maintenance to be achieved and what redress is available to those who suffer as a result of maintenance neglect. There is no clear legislation as to who is responsible for ensuring that proper maintenance is carried out.

The only existing references to maintenance are contained in the Public Health Act Cap 242, Landlords and Tenants Act Cap 301 and the Registered Lands Act Cap 300. These are persuasive pieces of legislation requiring the design profession and contractors to consider maintenance in the provision and upkeep of physical assets.



## **CHAPTER THREE**

### **3.1 HISTORICAL BACKGROUND OF NAIROBI**

Nairobi is a relatively young city in comparison to others worldwide, having been established in 1899 when the construction of the Kenya- Uganda railway (1896-1901) reached the well watered plains of Enkare Nairobi (which is a Maasai word meaning “a place having cool water :”)

Compared with most European and American cities, Nairobi is unusual in having a railway encampment as its pre-urban nucleus. The construction of the railway reached Nairobi in June 1899, and then, in July the same year, the railway headquarters were moved from Mombasa to Nairobi. In August of the same year, the Colonial Govt. Administration offices were also moved from Machakos to Nairobi.

By the turn of the century i.e. in 1900, a small Indian bazaar and a military barracks had been constructed. On the 16<sup>th</sup> of April, 1900, Nairobi's municipal regulations were established. However, an outbreak of plague between 1901 and 1902 caused the Indian bazaar to be burnt to the ground.

By 1906, Nairobi had been divided into the following definite land zones:

- a) the center of railway activities which was comprised of the railway station itself, marshaling yards, locomotive sheds and offices.



- b) the European business area which occupied plots along the length of the then Govt. road (now Moi Avenue) and a few of the original plots in the then Victoria Street (now Tom Mboya St.)
- c) the Indian bazaar was moved from Reata Road to a site of today's Moi Avenue.

By 1909, much of the road network in the Central Business District of Nairobi as we know it had been established, with the main features being :

- 1) the railway alignment
- 2) Nairobi river
- 3) the city's Central Business District

In, Nairobi was declared a municipality with a corporation, and the boundary was extended to include Parklands. During the period of the First World War (1914-1918), Nairobi had began to assume its Urban character due to erection, using local stone, of most of the large buildings.

In 1928, a new boundary absorbed more of the autonomous residential areas such as Karen, Langata, Spring valley etc. in 1963, there was the creation of a new Nairobi area which was joined into the CBD, residential, commercial and industrial areas.

The Central Business District was roughly joined into :

- Public buildings, between Haile Selassie and Kenyatta avenues.
- Religious buildings, between the then Duke street (today's Ronald Ngala) and Racecourse road which includes the Roman Catholic Church, headquarters of the National Christian Churches of Kenya

- Retailing area- along Moi avenue, Kimathi street, Kenyatta avenue, Biashara street and Koinange street.
- Office area - along Kenyatta avenue to Mama Ngina street.
- Entertainment area - the junction of Kenyatta avenue and Kimathi street i.e. the area around the New Stanley hotel.
- Workshops area - the slope leading to River road, along and around Grogan road.
- Cultural area around the building of the National Theater, Broadcasting house, Cultural center and the Norfolk hotel.

With the attainment of independence in 1963, there was an increase in the rate of construction activity all over Nairobi area. This increased construction has gone on over the years with there being the erection of newer, bigger, taller and more modern buildings.

However, even with the said development having taken place, older buildings which form part of our historic and cultural heritage have been left standing. Some of them are still being used as they were originally intended to, while others have witnessed change of user over the years.

### **3.2 DATA COLLECTION**

The preliminary data was mainly collected through the use of questionnaires which were administered to the maintenance managers of the respective buildings. Further data was obtained from various relevant documents which include the following :

- The Antiques and Monuments Act - cap 215 Laws of Kenya
- The National Museum's Act - cap 216 Laws of Kenya.
- The Mcmillan Memorial Library Act - cap 217 Laws of Kenya.
- Recurrent expenditure and forward planning budget statistics from the Central Bureau of Statistics.

The questionnaire that was administered to the maintenance managers generally aims at finding out the exact age of each particular building, the use to which it was currently being put to, the materials used in the construction of the various building components, the maintenance procedure carried out in each building, and the maintenance budget that has been set apart for each building.

N/B : The building components studied were the roof, walls and floors only.

### **3.3 DATA ANALYSIS**

#### **3.3.1 BUILDING DESCRIPTION**

For this research, the researcher obtained his data from the four buildings listed below :

- 1) Kipande house
- 2) The Kenya National Archives building
- 3) Khoja mosque
- 4) The Mcmillan library

##### **1) KIPANDE HOUSE**

Kipande House was constructed in 1913. It was originally designed to be a railway warehouse which was its most authenticated use i.e. the use to which it was put longest. It was later changed to a center for issuing national identity cards by the colonial government, hence the name Kipande house. In 1977, it was purchased by the Kenya Commercial Bank whereby it was modified, particular in the underpinning of the foundation.

Kipande house was officially declared National Monument in 1995, though it is still being occupied by the Kenya Commercial Bank which owns it under a freehold title. The handing over to the government is meant to take place very soon.

Currently, the building is valued at around Ksh.12.9 million. However, according to one maintenance manager this researcher

interviewed ( and who wished to remain anonymous), a more realistic value would be closer to Ksh.20 million, having taken care of depreciation.

CONCLUSIONS

Category	Item	Quantity	Value
Fixed Assets	Land	1000 sqm	10000000
	Buildings	5000 sqm	50000000
	Plant & Equipment	100 units	10000000
	Motor Vehicles	50 units	50000000
Current Assets	Stocks	1000 units	10000000
	Debtors	10000000	10000000
	Prepayments	1000000	1000000
	Other Assets	1000000	1000000

**TABLE 3.3.1(a) :****BUILDING COMPONENTS AND THEIR MAINTENANCE****( Kipande house )**

BUILDING COMPONENT	CONSTRUCTION AND FINISHING MATERIALS	OBSERVATIONS	COMMENTS
1) WALLS	<ul style="list-style-type: none"> <li>• Quarry stone</li> <li>• plaster</li> <li>• reinforced concrete</li> </ul>	<ul style="list-style-type: none"> <li>• very strong looking but are however dusty</li> <li>• no evidence of any cracks or defects whatsoever.</li> <li>• cleaning of walls done after every 3yrs.</li> <li>• interior painted after about 5 years.</li> </ul>	<ul style="list-style-type: none"> <li>• obviously the building was very well constructed to last a long time.</li> <li>• wall needed to be cleaned more regularly.</li> <li>• the walls also need a new coat of paint.</li> </ul>
2) ROOF	<ul style="list-style-type: none"> <li>• corrugated</li> </ul>	<ul style="list-style-type: none"> <li>• this is the area</li> </ul>	<ul style="list-style-type: none"> <li>• corrugated</li> </ul>

- iron sheets
  - ceiling made of cardboard.
- in which most defects were found with there being leaking and the cardboard ceiling pieces falling off frequently. (one individual piece measuring about 2ft x 1ft costs about sh.1700 and is thus very expensive.
- iron sheets roof is very old and needs to be replaced.
- falling or hanging ceiling piece also needs to be replaced more constantly.

### 3) FLOOR

- reinforced concrete (mostly the upper floor)
  - terrazzo
  - tiles
- floors are quite clean, but are well worn where service to the customers is offered.
- tiles need to be more regularly replaced.

subject it to the maintenance project of historic buildings and monuments. They therefore did not deem it very necessary to subject the building to rigid maintenance standards.

## **2) THE KENYA NATIONAL ARCHIVES BUILDING:**

The Kenya National Archives building was completed in 1931. It was originally a bank, and served as the headquarters of the Kenya Commercial Bank until the completion of KENCOM house in the late 1970's. It was later taken over by the government which gave it to the Ministry of Home Affairs and National Heritage. It is used to house public archives under the Public Archives Act Cap. 19 Laws of Kenya, which provides for the establishment of the Public Archives Service, and to provide for the preservation of public archives and public records.

As by the Kenya Gazette of 2<sup>nd</sup> December 1995, the Kenya Archives had been gazetted and listed as a historic facility. As far as its value is concerned, no official valuation that has been done, and as such, no exact figure exists as to its present value.



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## **2) THE KENYA NATIONAL ARCHIVES BUILDING:**

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As by the Kenya Gazette of 2<sup>nd</sup> December 1995, the Kenya Archives had been gazetted and listed as a historic facility. As far as its value is concerned, no official valuation that has been done, and as such, no exact figure exists as to its present value.

**TABLE 3.3.1.(b)****BUILDING COMPONENTS AND THEIR MAINTENANCE****(The Kenya National Archives building )**

BUILDING COMPONENT	CONSTRUCTION AND FINISHING MATERIALS	OBSERVATIONS	COMMENTS
1) ROOF	<ul style="list-style-type: none"> <li>• corrugated iron sheets</li> <li>• softboard ceiling (the iron sheets are of 26' gauge)</li> </ul>	<ul style="list-style-type: none"> <li>• leaking roof that causes the softboard ceiling pieces to keep falling off.</li> <li>• some parts of the ceiling were hanging dangerously.</li> </ul>	<ul style="list-style-type: none"> <li>• softboard ceiling pieces obviously need to be more constantly replaced.</li> <li>• the leaking roof should be repaired or replaced if need be the case.</li> </ul>
2) WALLS	<ul style="list-style-type: none"> <li>• natural stones and plaster.</li> </ul>	<ul style="list-style-type: none"> <li>• in general good repair, but a few</li> </ul>	<ul style="list-style-type: none"> <li>• need to be dusted or cleaned more</li> </ul>

cracks were often.

observed here and there. • the appearing cracks should be sealed.

• the exterior wall needs a new coat of paint.

### 3) FLOOR

• reinforced concrete

• concrete screed.

• wood parquet.

• terrazzo.

• carpet.

• general cleaning of the floors is done daily.

• the carpet is well worn mainly due to age and constant traffic.

• the parquet is in good repair and is also clean.

• the carpet needs to be replaced.

• the parquet could do with some waxing.

Maintenance in the Kenya Archives building is also done on a random repair basis. Usually, the maintenance is carried out by the staff of the Ministry of Public Works and Housing. According to the maintenance manager, a major problem they face is that due to bureaucracy, even a minor task such as repairing a door handle cannot be undertaken by one of them. They have to inform the staff in the concerned ministry who will then carry out the task.

The maintenance budget of the building is about Ksh. 200,000 annually. However, when consulted, the Deputy Director in-charge of maintenance said that a more appropriate figure to meet required expenses would be about Ksh. 500,000 annually.

The services in the building, such as the toilets and washroom, lifts, office accommodation and storage space were stretched to their limit. Basically, the problems experienced in maintenance of the building are in short :

- lack of finances
- lack of trained maintenance personnel
- lack of technical know-how
- lack of proper maintenance equipment
- inadequate or improper repair procedures.
- 

### **3. KHOJA MOSQUE**

Khoja mosque is one of the oldest buildings in Nairobi today, having been constructed in 1901. It was originally designed as a mosque, a use it is put to up to today. It is owned privately by the Ismailia Muslim community whose worldwide head is the Aga Khan.

The person in-charge of the building was not willing to divulge information about the building due to reasons best known to him. In fact it was after much persuasion that this researcher was able to gain access into the building to have a general idea of its condition.

**TABLE 3.3.1 (c)**

**BUILDING COMPONENTS AND THEIR MAINTENANCE**

**( Khoja mosque )**

BUILDING COMPONENT	CONSTRUCTION AND FINISHING MATERIALS	OBSERVATIONS	COMMENTS
1) WALLS	<ul style="list-style-type: none"> <li>• natural stone plus plaster</li> </ul>	<ul style="list-style-type: none"> <li>• the walls are in general good repair.</li> <li>• they are also very clean with this cleaning being done at least twice a year.</li> <li>• cleaning is done mainly</li> </ul>	<ul style="list-style-type: none"> <li>• sections that have the paint peeling off need a new coat of paint.</li> </ul>

with a wire brush.

- some interior sections however have their paint peeling off.

## 2) FLOOR

- concrete screed
- terrazzo
- tiles
- the floor is cleaned on a regular basis (twice daily) and is as such sparkling clean.
- the tiled section has all the tiles in place.
- basically, the floor is in such good condition because the building's users treat it with reverence as it is a place of worship.

## 3) ROOF

- it was originally made of tiles
- now has corrugated
- The roof is also in good condition.
- the ceiling softboard
- ceiling could do with a new coat of paint, otherwise there is no problem

- iron sheets pieces are in elsewhere.
- ceiling is place and there
- softboard is no sign of a
- leaking roof.

#### **Source : own field data**

Of all the historic buildings that this researcher had the privilege to inspect, Khoja mosque was the cleanest and one that had the best state of general repair. A contributing factor could have been the fact that the person charged with the responsibility of maintaining the building followed a strict planned routine maintenance policy.

The funds for maintaining the building are mainly obtained from the Aga Khan foundation, with other funds being contributed by members of the Ismailia community. This researcher was not able to establish the exact annual maintenance budget, but from his observations, he was able to conclude that it was quite sufficient.

## McMILLAN MEMORIAL LIBRARY

The Mcmillan Memorial Library building was completed in 1928. It was originally under the ownership of Lady Lucia Mcmillan. It was designed as a library, and this use continues to this day. In 1938, it was placed under trusteeship under the Mcmillan Memorial Library Act cap. 217 laws of Kenya. Its ownership was transferred to the then colonial secretary, the then director of Education and the then mayor of Nairobi, all who held it in trust for Lady Mcmillan.

Today it is held in trust by the Nairobi City Council under the Ministry of Local Government. Among other functions the library is meant to provide the following functions :

- a) Establishment, maintenance, and development of a reference library, a reading room, and a lending library.
- b) Organization, promotion and encouragement of public lectures, educational classes, cinema shows and any other course or method of education or instruction.
- c) Establishment, maintenance, development, promotion and encouragement of other libraries, institutions or societies in Kenya.

The Mcmillan library is an example of neo- classical architecture. It faces the Nairobi law courts which have been built in a similar style, at the other end of Wabera street. However, this is not so apparent as some buildings have come up in the way.



**TABLE 3.3.1 (d)****BUILDING COMPONENTS AND THEIR MAINTENANCE****( Mcmillan Memorial library )**

BUILDING COMPONENT	CONSTRUCTION AND FINISHING MATERIALS	OBSERVATIONS	COMMENTS
1) WALLS	<ul style="list-style-type: none"> <li>• stone</li> <li>• plaster</li> </ul>	<ul style="list-style-type: none"> <li>• no evidence of cracks or other major defects anywhere.</li> <li>• walls show signs of having recently undergone some major repair work.</li> </ul>	<ul style="list-style-type: none"> <li>• the generally good condition of the walls could be due to the fact that they have only been recently repaired.</li> </ul>
2) FLOOR	<ul style="list-style-type: none"> <li>• concrete screed</li> <li>• terrazzo</li> <li>• parquet</li> </ul>	<ul style="list-style-type: none"> <li>• floor is cleaned daily</li> <li>• wood parquet pieces in</li> </ul>	<ul style="list-style-type: none"> <li>• missing parquet pieces need to be</li> </ul>

place with replaced.  
only a few  
pieces  
missing.

### 3) ROOF

- concrete with
- the flatness of
- hard-core
- the roof was a
- pieces.
- major cause
- of leaking
- when it
- rained, but the
- problem is
- being rectified
- with the
- repairs being
- undertaken.

**Source : own field data.**

As at the time this researcher studied the building, there were major repair works and refurbishment taking place. Therefore, most of the areas that had some defects or failures had been addressed. Apart from this, the other maintenance works that were carried out on a regular basis was the cleaning of floors and services.

The building is currently listed as a historic building. the funds for the maintenance requirements of the library are generally obtained from the Nairobi City Council which is directly responsible to the minister for Local government.

### **3.1.2: IMPLEMENTATION OF LEGISLATION**

The most relevant pieces of legislation as far as historic buildings are concerned are the Antiques and Monuments Act cap 215, and the National Museums Act cap 217 of the laws of Kenya.

Analysis of these pieces produced the following conclusions :

#### **a) DECLARATION OF MONUMENTS**

Under this, the National Museum Board prepares a list of structures that are worthy of consideration as national monuments ( read : historic buildings )and forwards this list to the ministry of Home Affairs and National Heritage. The minister then, at his discretion, sanctions and declares those structures he deems worthy by the publication of a notice in the Kenya Gazette.

After publication of this notice, any objection to the declaration should be lodged with the minister within one month from the date of publication. After the period of one month has elapsed, the minister considers the objections, if any, and then confirms or withdraws the notice. Once confirmed, the building is protected and subjected to the requirements set out in cap 215 of the laws of Kenya.

The government may also, through the ministry of Home Affairs and National Heritage, purchase or take a lease or accept a gift or bequest of a historic building or monument. The National Museums Board is used to secure these deals. If the minister feels that an unlisted historic building or monument is in danger of being destroyed, or allowed to fall into decay, he may acquire the monument by way of compulsory purchase under the provision of the Land Acquisition Act. The owner of such a monument is first asked to sell or lease it to the government within two months, after which it is compulsorily acquired.

The ownership of monuments can also be transferred from one person to another either through sale or gift, but the new owner must meet the requirements provided in the Antiques and Monuments Act. However, the government reserves the right to stop any transaction involving land where historic buildings or monuments are situated, or stop the sale of the structures themselves.

### **b) MAINTENANCE AND CONSERVATION**

According to the various pieces of legislation concerning historic buildings and monuments, they should be properly maintained, whether placed under the care of the National Museum Board, or any other authority including private individual owners. No extensions or modification should be made on the external of the building, but partitioning may be done in the inside to suite the needs of the current occupier.

If the individual owner or institution entrusted with the care of an historic building fails to maintain it properly, he is notified of the requirement to undertake the necessary procedures. If, after being notified of the negligent fails to abide within reasonable time, the government, through various relevant authorities, may do the maintenance work, or employ another party to do the work at the expense of the current owner. In addition to this, the High Court may grant an injunction to stop any construction work on a monument.

For the building studied in this research, there were various departments concerned with their maintenance:

- Kenya Archives - maintenance carried out by the Ministry of Works.
- Kipande House - maintenance carried out by independent contractors under contract from the management of the Kenya Commercial Bank.
- Khoja Mosque - maintenance carried out by maintenance personnel employed by the Ismailia Muslim Community.
- McMillan Memorial Library - maintenance carried out by maintenance personnel employed by the Nairobi City Council.

### **c) OFFENSES**

The Kenya Law forbids any person from destroying, removing any items from monuments or historic buildings, altering or defacing them, or doing any work that would impair the preservation of a monument or historic building. Any person found guilty of committing such an

act, is liable to pay a fine not exceeding Kshs.10,000 or to imprisonment for a term not exceeding six months, or for both. He may be further required to pay for the costs incurred in repairing the damage he has caused.

### **3.3.3 MAINTENANCE / CONSERVATION BUDGETS**

On a national level, the government allocates money for the conservation and upkeep of historic buildings to the Ministry of House Affairs and National Heritage. This sum is based on the requirements of the buildings. The Ministry then discusses this money to the National Museums Board which then distributes it to the various buildings that are under its jurisdiction. This money does not however cover monuments which are under the jurisdiction of other ministries such as:

- 1) Karen Blixen museum - under the Ministry of Health.
- 2) Mcmillan Memorial Library - under the Ministry of Local Government. (Nairobi city council)
- 3) Kipande House - privately owned by the Kenya Commercial Bank.

**TABLE 3.3.2 : RECURRENT EXPENDITURE FOR THE  
MINISTRY OF HOME AFFAIRS AND NATIONAL HERITAGE  
AND ITS CONSTITUENT MUSEUMS AND ARCHIVES  
DEPARTMENTS**

YEAR	NET APPROVED EXPENDITURE FOR THE MINISTRY OF HOME AFFAIRS AND NATIONAL HERITAGE	NET APPROVED EXPENDITURE TO MUSEUMS AND ARCHIVES	MONEY DIRECTED TO MAINTENANCE WORKS	GRANTS TO NAIROBI MONUMENT
84/85	15,315,420	437,620	4,500	32,900
85/86	3,752,062	209,990	1,000	10,000
86/87	3,886,080	175,000	5,000	15,000
87/88	4,069,600	110,000	5,500	10,000
88/89	17,711,430	1,064,400	-	15,000
89/90	36,286,690	1,073,400	10,000	100,000
91/92	36,746,770	2,676,700	11,100	144,000
92/93	43,001,740	3,418,400	9,400	145,000

Source :Yearly Budget Recurrent Expenditures of the year between 1984/85 and 92/93.

(Central Bureau of statistics)

From the table above, it is clear that the maintenance budget for historic buildings and monuments is not very consistent. Rather , the grants awarded to these structures are unpredictable and therefore unreliable.

Analysis of these figures to get the percentages of total sum disbursement and maintenance budget is done in the table below :



**TABLE 3.3.3 : ANNUAL PERCENTAGE OF GRANTS TO MUSEUMS AND MAINTENANCE BUDGETS**

YEAR	%age of total sum disbursed to museums and national archives	%age of the sum disbursed used for maintenance
84/85	6.0	1.0
85/86	5.6	0.5
86/87	4.5	3.0
87/88	2.7	4.5
88/89	6.0	-
89/90	3.2	0.8
90/91	7.5	0.6
91/92	8.1	0.3
92/93	8.2	0.2
TOTAL %	51.8	10.9

**Sources : 1) Recurrent Expenditures from Central bureau of statistics.**

**2) Own field study.**

a) Annual average of total sum disbursed to museums and national archives =  $x/n = 51.8/9 = 5.8\%$

b) Annual average of sum used for maintenance of monuments =

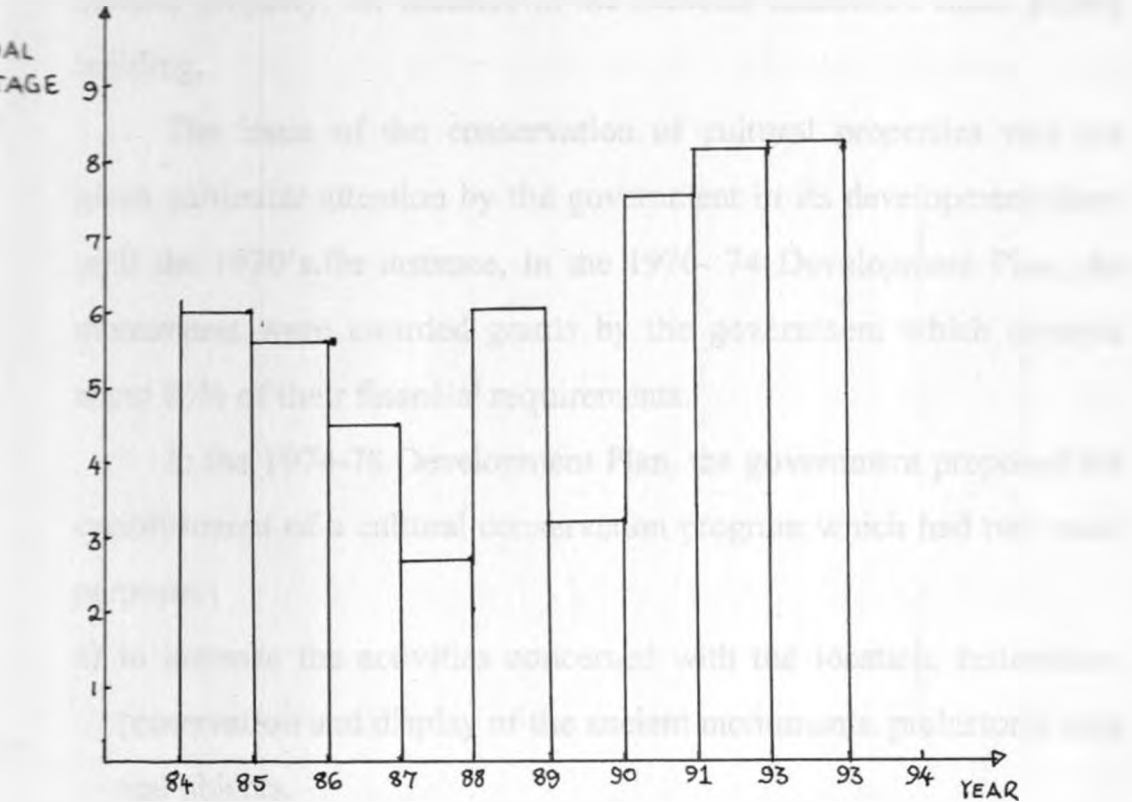
$$x/n = 10.9/9 = 1.2\%$$

where x = summation of annual percentages

n = number of years.

The above table (3.2) shows both the percentages of sum disbursements to net approved expenditure, and maintenance budgets to total maintenance works allocations. It is clear that a very small percentage of the actual approved expenditure for museums, historic buildings, monuments and archives is actually disbursed to the required areas. An even smaller percentage gets to be used for maintenance requirements.

**GRAPH 3.0 : ANNUAL PERCENTAGE OF MUSEUM GRANTS AND MAINTENANCE BUDGETS (Ref. : TABLE 3.2)**



The forward recurrent budget indicates that the budget figure allocation to monuments increases every year while the percentage disbursement used for maintenance requirement is erratic and shows a steady decline. This means that the money obtained for maintenance becomes more and more inadequate with the passing of the years. This problem is compounded further by the increase in the number of listed buildings and monuments.

However, the government is not the only source of finance for the upkeep of historic monuments. Other organizations such as the Aga Khan Foundation, Barclays Bank, United Nations Development

Program have donated generously to conservation works. Some money is also obtained by charging some fee to visitors wishing to view the cultural property, for instance at the National museum's main gallery building.

The issue of the conservation of cultural properties was not given particular attention by the government in its development plans until the 1970's. for instance, in the 1970- 74 Development Plan, the monuments were awarded grants by the government which covered about 85% of their financial requirements.

In the 1974-78 Development Plan, the government proposed the establishment of a cultural conservation program which had two main purposes :

- a) to increase the activities concerned with the location, restoration, preservation and display of the ancient monuments, prehistoric sites and objects.
- b) to increase the education of the general public due to the worldwide significance, and to encourage the research work in this field.

### **3.4 PROBLEMS ENCOUNTERED**

The main problems this researcher encountered was mainly in getting the concerned parties to divulge the information required. There was a tendency to give vague answers to some of the questions, some of the interviewers declined to answer some questions altogether because they regarded them as touching on 'sensitive areas'.

There were also instances where the researcher could not gain access to the persons best placed to answer the questions comprehensively, and thus we had to resort to people who were less qualified and therefore unable to answer all the questions.

The owners of practically all the monuments were sensitive to their premises being photographed especially in the inside. This meant that the researcher had to resort to some 'clandestine' manouvres which resulted in the photographs being unreliable and unusable.

## **CHAPTER FOUR**

### **4.0 CONCLUSIONS AND RECOMMENDATIONS:**

#### **4.1 CONCLUSIONS**

From the analysis, it is evident that proper maintenance schedules are not used in the performance of maintenance works on historic buildings. Maintenance works are done on a random basis and are largely dependent on the availability of resources. This leads to a negative influence in the implementation of regular preventive maintenance works that are planned in advance.

One major constraint to the effectiveness of the maintenance work done is the lack of maintenance records. This means that references of past records is not possible, and therefore proper planning of future maintenance requirements is just not feasible.

The personnel used to maintain these historic buildings are largely unskilled, with the skilled manpower being used to undertake emergency repairs if and when required. This leads to small defects that are easy to remedy being overlooked, and thus resulting in more demanding repair work.

Another problem identified is the lack of adequate and effective maintenance tools and equipment which leads to the hampering of the efficiency and effectiveness of the maintenance work done. Rather, the maintenance work that is regularly carried out is the sweeping and cleaning of floors, walls, and services, otherwise no other maintenance

tasks are common. As such, the main tools and equipment used are brooms, dusters and mops.

One other problem identified, and this mainly applied to those historic buildings that are under the direct management of the government is bureaucracy.

For instance, if a small component of the building failed, say, a door handle coming off, or a water closet breaking down, the building management had to inform the relevant ministry (in this case the ministry of Public works and Housing), and wait for their personnel to come and carry out the necessary repair work. Therefore, the time taken to carry out minimal repair work is generally long.

As far as conservation is concerned, it is clear that the Kenya government has made some efforts towards the preservation of historic buildings. This is particularly evident in those pieces of legislation such as the Antiques and Monuments act (cap 215), and the National museums Act (cap 216) which have been enacted for among other things ; protection and preservation of monuments, acquisition of monuments and their repair and maintenance. However, the procedure of maintenance of historic buildings and monuments is vaguely defined in law.

The issue of the conservation and maintenance of historic monuments has also appeared in a number of National Development Plans. Funds to preserve these monuments are released from the central government on an annual basis as indicated by the forward budget planning and recurrent expenditure figures. However, complaints have been received as to the inadequacy of these funds.

There is also a problem in the implementation of government policy towards the conservation of historic monuments. There is no clear policy guideline as to how the provisions and disbursement of funds can be implemented .

Currently, there is a set format to be employed in maintaining historic buildings. However, different systems are employed. Basically, the authorities entrusted with the care of historic buildings devise their own maintenance procedure. Due to the absence of a clear policy guideline, it is therefore difficult to achieve the set standards from conservation works.

The general public also has very little to do with the conservation of historic buildings. In fact, the public takes the monuments for granted especially due to their poor appearance resulting from inadequate maintenance procedure. Some members of the public are also ignorant of the relevance and importance of maintenance and the eventual conservation of historic monuments. The Kenya Government, on its part, has taken very little initiative towards creating public awareness of the relevance of conservation of cultural properties.



## **4.2 RECOMMENDATIONS**

The researcher has come up with the following recommendations to ensure that historic buildings and monuments are effectively maintained for their eventual conservation :

- 1) A routine system for the maintenance of our historic buildings and monuments should be established. In addition to this, there should be a year- by- year logbook in which records of cost, defects, and inventory control are kept. This will ensure that there is a feedback of essential data thereby enabling national policies towards the effective conservation of historic buildings and monuments to be formulated.
- 2) The town planners, valuers, architects and other related professionals should co-operate so as to find appropriate uses for cultural properties. There can be either their original use, or other uses which do not necessitate the complete overhauling of the building's design.
- 3) When rehabilitating a cultural property, the concerned professional should conduct a careful study of the building's history and original construction materials so as to ensure that any work done on the building is in sequence with the original design.
- 4) Building maintenance has not been given the status it deserves. Skillful management of building maintenance while respecting the principles of conservation, is a high- level occupation which deserves respect. As such, the training of maintenance technicians and professionals should be given due consideration, and emphasis

should be placed in the employment of skilled personnel to maintain historical properties.

- 5) In relation to 4 above, the hierarchy for skill and organization for effective maintenance should be examined. Handymen who are competent in maintenance procedures should work under a conservation craftsman specializing in repair and reproduction work.
- 6) The government should establish a central system of controlling and monitoring funds, procedures and any other modalities associated with cultural properties. The National Museums Board is one such authority that, if provided with adequate funds and power, can achieve this recommendation.
- 7) The government should also put greater emphasis in educating the public about the importance and relevance of the conservation of historical properties. The public should also be encouraged to participate in conservation efforts, either through donations or by offering their free time.
- 8) Maintenance of legislative instruments should be revised. The scattered sections of law touching on the maintenance of buildings and infrastructure should be consolidated. This would lead to the laying down of more acceptable standards, consistent application and follow-up, and the setting of a single body to enforce them.
- 9) The government and other concerned authorities should provide more funds towards the maintenance and conservation of cultural properties. In addition to this, the managers of such properties should devise systems of obtaining more funds. For instance,

visitors wishing to view such buildings may be required to pay a gate fee.

### **4.3 AREAS OF FURTHER STUDY**

Presently, there is very little literature on the maintenance and conservation of historic buildings especially with relevance to Kenya. Infact, this practice has only gained some recognition in the recent past. It is therefore suggested that further research should be conducted in the following areas :

- a) The impact of industrial pollution on the effective conservation of historic buildings and monuments.
- b) Towards a more effective legislative instrument on the maintenance management operations.
- c) How the various professionals in the construction and development industry can be utilized in the conservation of the built environment.

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QUESTIONNAIRE FOR MAINTENANCE MANAGERS

1. a) When was this building constructed?  
\_\_\_\_\_
- b) Is listed as an historic building?  
\_\_\_\_\_
2. a) What use was the building originally designed for  
\_\_\_\_\_
- b) What is its present value  
\_\_\_\_\_
3. What materials were used in the construction of:
  - i) Walls? \_\_\_\_\_
  - ii) Floor? \_\_\_\_\_
  - iii) Roof? \_\_\_\_\_
4. Which maintenance programme is used? (Tick where appropriate )
  - i) Planned routine maintenance [ ]
  - ii) Corrective / Repair maintenance [ ]
  - iii) Unplanned / Random maintenance [ ]
5. Are maintenance manuals and past maintenance records kept?  
(Tick) Yes [ ] No [ ]
6. How often is inspection and routine maintenance work done  
(Tick)
  - a) Annually [ ]
  - b) Biannually / twice a year [ ]
  - c) Quarterly / four times a year [ ]
  - d) Other number of times a year (specify) [ ]
7. Is there a checklist guide that is used on inspection work?  
Yes [ ] No [ ]

8. Which facilities are inspected and what is usually checked for?

Facility Inspected	Checked for
i) .....	.....
ii) .....	.....
iii) .....	.....
iv) .....	.....
v) .....	.....
vi) .....	.....

9. Which defects are common and what are their rectification?

Defect	Rectification
i) .....	.....
ii) .....	.....
iii) .....	.....
iv) .....	.....
v) .....	.....
vi) .....	.....

10. According to your experience, what are the major causes of defects and failures in its building? (Tick)

- a) Poor design [ ]
- b) poor construction materials [ ]
- c) Climate [ ]
- d) Vandalism [ ]
- e) User activities [ ]
- f) Wearing out due to age [ ]
- h) Lack of proper inspection [ ]
- i) Combination of any above (Specify which) [ ]



11. Which measures do you take to counter, reverse or check the effect of the above factors?

- i) \_\_\_\_\_
- ii) \_\_\_\_\_
- iii) \_\_\_\_\_
- iv) \_\_\_\_\_
- v) \_\_\_\_\_

12. How are maintenance personnel recruited (What qualifications are necessary)?

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

13. Which tools and equipment are used in maintaining this building?

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

14. How many workers are employed to maintain this building?

\_\_\_\_\_

15. Are these workers supervised? Yes [ ] No [ ]  
If no, how then is their work assessed?

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

16. Where do you obtain your finance for the maintenance of this building?

\_\_\_\_\_  
\_\_\_\_\_

17. a) How much money is allocated towards the maintenance budget of this building? (i.e. annually)

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---

b) In your opinion, is it enough?

---

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c) If no, what amount would you recommend as appropriate?

---

18. Are the services in this building stretched to their limit or are they under-utilized? (Specify)

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---

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19. What problems are encountered in the maintenance of this particular building?

i) \_\_\_\_\_

ii) \_\_\_\_\_

iii) \_\_\_\_\_

iv) \_\_\_\_\_

v) \_\_\_\_\_

20. What would you recommend as possible solutions to the problems encountered?

i) \_\_\_\_\_

ii) \_\_\_\_\_

iii) \_\_\_\_\_

iv) \_\_\_\_\_

v) \_\_\_\_\_