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GRADUATE SCHOOL OF NATURAL AND APPLIED SCIENCES

MASTER'S THESIS

# ADAPTIVE REUSE POTENTIALS OF HISTORIC BUILDINGS IN NIGERIA: CASE STUDY OF TWO ABANDONED VERNACULAR PALACES

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# ABSTRACT

## ADAPTIVE REUSE POTENTIALS OF HISTORIC BUILDINGS IN NIGERIA: CASE STUDY OF TWO ABANDONED VERNACULAR PALACES

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Msc, Interior Architecture and Environmental Design

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The need for new construction has led to radical demolition of vernacular and historic buildings. Furthermore, to meet contemporary needs in construction, vernacular buildings have been abandoned despite their simplicity, inheritance of historic values and resistance to seismic actions (as seen in some buildings around the world). In South-Western Nigeria (the Yoruba area of the country), many palaces have been abandoned and are out of use after the demise of the king that occupied them. This is prominent in Ibadan.

Having investigated the conditions of two palaces in this study – *Aleshinloye and Aare Latoosa Palaces*, adaptive reuse was suggested to rehabilitate and rejuvenate them while putting together the main content of the three adaptive reuse theories of technical, topological and strategic approaches. This paper reviews the literatures on adaptive reuse of historical buildings and suggests a method of adaptation. It also emphasizes a major advantage of prolonging the useful life of all vernacular buildings by reusing them for a purpose that will benefit the locals. The interviews held during investigation revealed the importance of several historic elements in the palaces and a restoration project was suggested so that these elements are retained and/or redesigned so as to maintain the historic value of the palaces. The study exploits the potentials of the abandoned palaces, suggested possible adaptive reuse that suits their structural conditions. Furthermore it reveals that maintaining and reusing these palaces could uplift the historic value and heritage landscape of the community with social, economic and other historic benefits.



**Key words:** Adaptive reuse, historic buildings, Nigeria, vernacular palaces, conservation of historic buildings, abandoned buildings.

# ÖZET

## NİJERYA'DA TARİHİ BİNALARIN ADAPTİF YENİDEN KULLANIM POTANSİYELLERI: İKİ TERK EDİLMİŞ YÖRESEL SARAYIN ÖRNEK ÇALIŞMASI

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Yeni inşaat ihtiyacı, yerel ve tarihi binaların radikal bir karar ile yıkılmasına yol açtı. Ayrıca, inşaatta çağdaş ihtiyaçları karşılamak için, basit yapılar, tarihi değerlerin mirası ve sismik eylemlere (dünyadaki bazı binalarda görüldüğü gibi) direnç gösterilmesine rağmen, yerel binalar terk edilmiştir. Güney-Batı Nijerya'da (ülkenin Yoruba bölgesi), birçok saray terkedildi ve onları işgal eden kralın ölümünden sonra kullanım dışı kaldı. Bu İbadan'da öne çıkıyor.

Bu çalışmada iki sarayın koşullarını araştıran Aleshinloye ve Aare Latoosa Saraylarını, yenilemek ve canlandırmak için yeniden kullanılması önerilmiş, teknik, topolojik ve stratejik yaklaşımların üç adaptif yeniden kullanım kuramının ana içeriğini bir araya getirmiştir. Bu makale, tarihi yapıların uyarlamalı yeniden kullanımı ile ilgili literatürü gözden geçirmekte ve bir uyum yöntemi önermektedir. Aynı zamanda, yerel halkın yararına olacak bir amaç için onları yeniden kullanarak tüm yerel binaların ömrünü uzatmanın önemli bir avantajını vurgulamaktadır. İnceleme sırasında yapılan görüşmeler, saraylardaki tarihi eserlerin önemini ortaya koymuş ve bu yapıların sarayların tarihi değerini muhafaza edecek şekilde muhafaza edilmesi ve / veya yeniden tasarlanması için bir restorasyon projesi önerilmiştir. Çalışma, terk edilmiş sarayların potansiyellerini sömürüyor, yapısal koşullarına uyan olası adaptif yeniden kullanımı öneriyor. Ayrıca, bu sarayların sürdürülmesinin ve yeniden kullanılmasının toplumun tarihi değerini ve miras alanını sosyal, ekonomik ve diğer tarihi faydalarla iyileştirebileceğini ortaya koymaktadır.

**Anahtar kelimeler:** Uyarlanabilir yeniden kullanım, tarihi binalar, Nijerya, saraylar, tarihi yapıarinnın korunması, terkedilmiş yapılar.

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I would like to express my enduring love to my parents, who have always been supportive, loving and caring to me in every possible way in my life. Lastly to my friends in Turkey and Nigeria, thanks for being there for me when I needed any help.

Arisekola Taofeek Mudashiru

Izmir, 2018

## TEXT OF OATH

I declare and honestly confirm that my study, titled "ADAPTIVE REUSE POTENTIALS OF HISTORIC BUILDINGS IN NIGERIA: CASE STUDY OF ABANDONED VERNACULAR PALACES" and presented as a Master's Thesis, has been written without applying to any assistance inconsistent with scientific ethics and traditions. I declare, to the best of my knowledge and belief, that all content and ideas drawn directly or indirectly from external sources are indicated in the text and listed in the list of references.

Arısekola Taofeek Mudashiru

……..

September 5, 2018

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# CHAPTER 1

# INTRODUCTION

Ingenuity and wisdom, speaks out the creative works which can be seen in historical vernacular buildings. These lie strewn across fast growing cities in Nigeria. This irreplaceable evidence stands as a reference to a society and, thus, they are definitely unique cultural, scientific and historical objects and should be managed responsibly. Historical buildings and structures prepare the foundation which defines the architectural heritage or background of towns and cities. Maintaining and reusing heritage buildings is a way of reducing waste and sustaining the economic value of historical buildings (Highfield, 1978).

Adaptive reuse is a global practice which is a sustainable way of salvaging these precious existing resources 'as an asset' from further deterioration or abandonment while giving them a new life could serve as a means of strengthening their heritage value. Communities that host them can also contribute to economic development by increasing their usefulness for a long period. Deterioration is maintained in as much as the buildings go through programmed restoration and reclamation and their reuse is within the bearing capacity of old buildings. Mostly, the type of historical buildings which are susceptible to adaptation are industrial buildings. These occur from abandonment, from liquidation or changing of site. Political and community buildings like palaces, churches and schools can also be subject to adaptive reuse as a result of change of function over time. (Jacobs, 1961)

Another intriguing aspect about building adaptation involves the concept of vernacular architecture. This is a term that is used to define the method of construction which involves local techniques (by non-qualified architectural means), and use of locally available resources (like timber and stones) in order to cater for local needs. Vernacular architecture is defined as a structure/building developed by local techniques without any form of training in design. This method may not take into account what is fashionable. Hence, vernacular architecture tends to reflect cultural and historic background of the environment in which a building exists.

The method is a native means of architecture which is often adopted for ancient buildings. They cater for lesser imposed loads (Brunskill, 2000).

This study is an exposure on the behaviour of historic palaces built with traditional techniques and local materials. They are within the Yoruba region of Nigeria. It also shows an awareness on how these historic buildings can be rehabilitated, restored and renovated for adaptive reuse

rather than abandoning them. It also gives an understanding on how contemporary design and vernacular construction techniques could work alongside each other. By suggesting possible interior decoration and designs suitable for the rehabilitation process, each suggested adaptive reuse can be seen. Also, it explores the exposure to how a building's adaptation to new historical buildings could help in urban regeneration. Suggestions on new suitable uses for selected abandoned old palaces can help to sustain the historic heritage of communities. Two case studies have been selected for the purpose of this study. The common features were considered in selecting the case studies, i.e. *Aleshinloye Palace and Aare Latosa Palace* includes; mode of design, local construction materials, similar interior features and structural characteristics, lifestyle condition and culture.

## 1.1. Statement of Problems

The increased need for space for the new building techniques in Nigeria was drastic after the end of British colonization in 1960, thus, rendering traditional building practises useless. This has led to radical demolition/abandonment of vernacular architectures buildings in the country. Continuous demolition of historic building is a setback in conserving the historic heritage of the nation and thus, regeneration of these buildings is a way of conserving the heritage significance they offer. Demolition of vernacular buildings or abandoning to gross deterioration is inflicting loss of cultural heritage, whereas its contributions to characteristic townscape, even in the age of sophisticated construction techniques, cannot be overlooked.

Another stance for this study is that vernacular architecture has a tight correlation between understanding the cultural norms of the community and the people in the community (i.e. designers and users) most of which have been lost to modern construction techniques. Adaptation of these typical structures retains the cultural and social values that come with the buildings, although this cannot be argued to be true for all buildings. Buildings that are still restorable and haven't been damaged beyond renovation are believed to be supposedly put to adaptive reuse. However, the process of building adaptation includes the listing of processes that provides method to determine old buildings that offer cultural and social significance enough to be put into reuse.

In many developed nations, putting historical buildings into adaptive use has become an important method adapted to achieving sustainable developments by merging the idea of the past with the concept of present techniques to create a historic structure (Department of the

Environment and Heritage, Australia, 2005). This lack of study and practice in Nigeria may hinder any form of progress in facing the challenges to meet increasing needs of the population, as well as an inspiration for the future generation as a gain from building rehabilitation and protection. However, when considering quality, space, and heritage values, reuse of historical buildings has become inevitable. This study discusses in details the significance of this approach.

## 1.2. Aim of Research

This work aims to study and expose the potentials of abandoned vernacular palaces in Nigeria for adaptive reuse in an effort to save them from further deterioration. Focusing on the benefits of regeneration of historic buildings and exploiting interior and surroundings characteristics of these palaces will suggest possible ways in which they could be put into new use. The two selected case studies, *Aleshinloye Palace* and *Aare Latosa Palace,* are located in Ibadan, Oyo state (South-Western Nigeria). The abandonment of the case studies was dues to common reasons: loss of interest in ancient structures and need for newer designs, change of monarch leaders and the cultural monarchical ruling system. Interior features and characteristics of these palaces would be exploited. How to maintain these vernacular interior features would be suggested as an attempt to expose the potentials of the building and the extent to which they can economically benefit their communities. While reuse of old buildings has not been recognised as a way of conserving historic building in Nigeria, this research looks into the means with which owners and authorities can make use of historic buildings rather than demolishing and/or generating waste.

## 1.3. Research Questionnaire

In as much as the topic is related to royal residential buildings, privacy was handled delicately in interviews of owners of sample buildings. During the interview, technical questions revealed potential technical issues that might be used in overcoming problems of selected case studies. The answers provided and the findings have been displayed in the analysis section of the work. Only a few of the interviewees were able to supply structural information. Hence, structural information was eliminated from the study of the palaces.

A simple relatable question like "*when was this palace built?*" assisted in getting the time during which these buildings were built. Some information has been lost due to lack of

recording historical facts. During the interview, the participants also related the materials with which the buildings were constructed and in important adjustments and maintenance.

Other questions are as follows:

- What was the value during when the palace was constructed?
- Have you made any technical adjustment, renovation and/or reformation to the palace?
- When was the first time you carried out any form/type of maintenance on the building?
- Has anyone approached you with the idea of using this palace for other purpose(s)?
- Are there any technical or structural issues the palace is exposed to?
- What is the present value of the palace?
- When was the last time the palace was used for its purpose?
- What were the main reasons for abandoning the facility?

## 1.4. Scope of Research

For the purpose of this thesis, palaces as old as 200 years were considered. The method of construction of those structures was restricted to local design and vernacular dimensions. The reuse of old vernacular buildings is delicate. Because their adaptation method would retain the structural features of the building and these must be appropriate. The thesis considered the incorporation of recent interior architecture into the ancient vernacular buildings. Suggestions of the building adaptation process were also made following the assumption that the buildings have been adequately restored and renovated to withstand the adaptation process without delving into structural detail and analysis. Hence, the thesis would serve as a milestone and source of information for private and public individuals on what process of adaptation they may adopt in old buildings.

## 1.5. Research Limitations

During the course of the study, one of the major challenges that was faced involved lack of record keeping on the ancient buildings. Information such as detailed structural, architectural and mechanical drawing of the buildings were not available. Exact information on previous maintenance programmes carried out were also not provided. In order to cater for the missing information, a sketch of the case studies was done on site and then converted into a more professional drawing using Computer Aided Design programme. However, providing detailed structural and mechanical drawings was not successful as this might warrant a lot of

assumptions which may, on the long run, be misleading to experts that would make use of such information either for adaptive reuse or ordinary maintenance programmes.

## 1.6. Research Methodology

There are several studies that have examined standards and principles for adaptive reuse of old buildings. But most only have limited analysis (Heath, 2001; Kincaid, 2002 and Ball, 2002). Meanwhile, from the studies stated above, criteria for building adaptation have been identified and a different analytical approach was adopted.

In an attempt to achieve comprehensive understanding of the research, the two case studies featured open-ended interviews. Open-ended interviews help to keep the objectives of the research in mind and the procedure creates systematic understanding of the topic by the researcher and the interviewees (Babbie, 2001).

During the interviews, technically structured questions revealed reasons for the abandoning of the historic buildings. For adequate information, the interviewees were chosen from members of the communities (appreciably the elderly) so as to retrieve genuine information. The questions also centred on tourism, government intervention and cost of maintaining the old buildings.

The answers provided and findings obtained were related in analyses section of the research. A discursive analytical approach was used while taking one case study at a time.

### 1.6.1. Information on Interviews

The interviews were an exposition on the historical background of the case studies and a means to retrieve any information on possible maintenance programme for the two palaces under inspection. The Yoruba region is predominantly occupies Southwestern Nigeria (*see section 2.5 P,26*) and part of their cultural respect allocated to their kings. This respect is passed on to the eldest heirs of royal families whom are referred to as *Magaji* (*see footnote 7 P, 24*). The family name is attached to the title thus for the two palaces, *Magaji* of Aare Latoosa Palace (age 81) and *Magaji* of Aleshinloye Palace (age 79) were interviewed.

Movements were restricted within Aare Latoosa Palace as there are several spiritual spots tagged “sacred” by the family thus, such respect must be allocated by the community.

The *Magaji* reiterated:

> "*the king was a warrior and he engaged in and won many battles within and outside of Ibadan. He had a room that only himself could enter where he sought, prior his battle, spiritual aid and powers.*"

### 1.6.2. Inspection Procedures

During the inventory/inspection procedure, the following steps- as outlined by Cunningham (1998) and Jianguo (2003) on inspection of old/historic buildings were adhered to.

To inspect an old building effectively;

a. An integrated team of professionals have to collaborate: administrator or owner, archaeologists, architects, art/ architectural historians, contractors, conservators, civil, mechanical, and electrical engineers, environmental engineers, historic garden engineers, master craft workers, material scientists, quantity surveyors, town planners and curators.
b. A historical research and analysis supported by photographic records has to be committed.
c. Initial report based upon visual inspection listing all the defects (voids, cracks discontinuities, etc.) must be done.
d. Evaluation of the total structural performance and recording of the initial state of the building: soil mechanics, humidity studies and opening up doubtful parts should be included.
e. Authentic visual appearance, it's detailing, dimensions, colours and textures are of prime importance and must be considered.
f. Adapting historical buildings for new usage may require applying new technologies or materials to enhance the level of comfort and suit the new usage of the building. However, in very little rooms, this action requires sound technical knowledge, combined with good design, craftsmanship and sensitivity.
g. Final estimates and proposals with specifications and full report is needed in order to apply for a governmental grant.

### 1.6.3. Data Collection

For this research work, both primary and secondary data were used in the following ways: primary data in case of pictures, information generated from the interviews, deductions that

were made *in situ* during site visits to the historic buildings and drawings. On the other hand, secondary data was obtained from printed information and online sources. These two sets of data were merged to create a genuine method of data collection that was appropriate for privacy of the topic as it related to residential issues.

## 1.7. Structure of the Thesis

The contents of this thesis are arranged such that they gradually enlighten rudiment concepts of the context one at a time in different sections and chapters. In all, the contents are presented in five logically arranged chapters. The first provides adequate information on the topic in general. This chapter consists of statement of problems that warrant the need for this research and a set of research questions which the thesis aims to answer. The perception of vernacular architecture and the historical values of the community attached to their vernacular structures are presented in chapter two. Also presented in this chapter are examples of vernacular buildings other than the area of study- monuments, residential, churches, etc. within Nigeria and its States under consideration. Chapter three presents an insightful exposition on building adaptation around the world highlighting the economic benefits of building reformation, renovation and adaptation. This chapter also describes available adaptation methods and factors to consider before putting buildings into adaptive reuse. The penultimate chapter deals with the palaces under study, exposing their relevant potentials for adaptive reuse and how they can benefit the community, taking one case study at a time. The interior architecture of the case studies is studied in this chapter and appropriate touches, finishes and renovations are suggested to appropriately put them to effective adaptive reuse. Findings from the thesis are summarized in chapter five and applicable recommendations outlined for further studies, economic use of the thesis and architectural application for adaptive reuse of ancient structures.

The penultimate chapter deals with the palaces under study, exposing their relevant potentials for adaptive reuse and how they can benefit the community, taking one case study at a time. The interior architecture of the case studies is studied in this chapter and appropriate touches, finishes and renovations are suggested to appropriately put them to effective adaptive reuse. Findings from the thesis are summarized in chapter five and applicable recommendations outlined for further studies, economic use of the thesis and architectural application for adaptive reuse of ancient structures.

# CHAPTER 2
# VERNACULAR ARCHITECTURE AND HISTORIC VALUES

It is believed that vernacular architecture includes primitive structures that serve their purposes to perfection and they do not follow any form of fashion trend. This attribute of vernacular architecture makes them almost incontrovertible and hard to improve (Rudofsky, 1964).

Vernacular architecture needs to encapsulate three basic dimensions which are the place, the people and the routes as explained by Farmer (1993). The term "vernacular" as used in this thesis was introduced by Rudofsky (1964) in his influential publication on "*Architecture without Architects*". In this publication, he highlighted his opinion on vernacular architecture as an attempt to breakdown the ideas of art in buildings, by creating a unique pattern, while making use of non-sophisticated architectural materials and techniques. He suggested that:

> "*... for want of a generic label we shall call it vernacular, anonymous, spontaneous, indigenous, rural, as the case may be*" (p. 58).

The form of vernacular architecture varies in different parts of the world. But they all have some features in common considered when defining vernacular architecture. Vernacular architecture comprises of a place of living and/or other buildings for other purposes, in which traditional technologies were utilised for the construction and their customary owners are individuals and/or the community. Furthermore, vernacular buildings have construction ideas, techniques and innovations by the people within a certain community. But these structures were built to meet certain needs and values reflecting the way of life of the people that built them (Oliver, 2003).

A further elaboration following the definition of vernacular architecture was set up by Rudofsky. He takes vernacular architecture as being the traditions and means of building construction that humans have developed and adopted over the years in order to sustain their needs and survive in the environmental condition they find themselves (Ozorhon, 2014). He argued that the needs of people change according to climatic conditions. These major factors lead to the creation of this architecture. People needed to protect themselves from cold weather, wind, rain and sun which determine the variability in vernacular architecture from culture to culture. People in colder region build lower and less spacious structures while those in temperate regions opt for a more spacious structure with large windows for adequate ventilation.

Following the enlightenment by Rudofsky, a more visual and practical exposure to vernacular architecture was taken. He helped the theme of introduction of "vernacular" into architecture was a photo exhibition was held in New York showing a monochromatic photo presentation of vernacular/traditional architecture around the world cited by Bjornard (2010). He specified that vernacular architecture is not just a mixture of different building patterns and styles, but also an ancient construction method that points out the direction of a more sustainable and economical means to satisfying most of human needs (accommodation), with the least of sophisticated materials and techniques.

In writing "*Building Tradition: Control and Authority in Vernacular Architecture*" Bronner (2006), established the debate of a model to control and gather authority in vernacular architecture. He further explained the prospects, choice and transmission in vernacular architecture of traditional buildings. Bronner's work was on a model for quality control of vernacular building and showed how to establish authority in the creation and conservation of vernacular structures. It was Noble (2007) who distinguished between different forms of architectural approach as in vernacular and traditional architecture, folk architecture and popular architecture. Traditional and vernacular architecture are often used interchangeably. However, these two terms should not be confused. Vernacular architecture is a structure made by the common people who may train individuals through apprenticeship, while using a technique that deploys locally available materials and traditional designs. Traditional architecture on the other hand is architecture that is most particularly passed from individual to individual orally and at any level of society. The individual passing the information does not need to be trained. This point was highlighted by Noble (2007).

## 2.1. Qualities and Features of Vernacular Architecture

A major and intriguing attribute of vernacular housing and structures is that they are built with building practices, firm elements and materials which all result in a structure that has high performance and resistance against seismic conditions (Cañas and Martın, 2004). They cited examples from different regions around the world which are particularly susceptible to high seismic risks. Vernacular architectures in India, El Salvador, Peru, Turkey, Kyrgyzstan, Italy, Portugal, Japan and other places prone possess high seismic resistance. These vernacular buildings were all constructed without prior sophisticated technical techniques, knowledge and with local materials and archaic/primitive methods. In their explanation, the local population of the aforementioned countries come to master the principles of seismic resistance

construction techniques resulting from their previous attempts to resist constant earthquake threats. As they witness an earthquake, buildings that performed well were improved and such techniques are used to build a similar structure. Hence, creating a culture of seismic resistance architecture from traditional materials and techniques developed. Remarkably, this similar process was practiced across different cultures so much so that they have independently arrived at similar techniques for constructing buildings with high seismic performance and resistance (Cañas and Martın, 2004).

## 2.2. Vernacular Architecture around the World

Organization of an elaborate graphical demonstration on major aspects of ancient vernacular architecture which included the most important Maju Dega temples (Nepal), Buddhist monasteries (Biaro Bahal - North Sumatra, Indonesia) and Hindu priest houses (Brahmin varna, India) was done by Korn (1979). Records from his research showed some of the world's vernacular architecture and buildings and organizations. In his research summary, he explained that there are connections between the appearances of towns, villages and cities that have changed over the years and the unchanged building techniques, culture and materials.

Meanwhile, prior to Korn's work in 1979, Rudofsky (1964) explored some vernacular architecture around the world and explained ancient construction patterns peculiar to certain locations around the world. Some of the vernacular structures found by Rudofsky are: the Amphitheatre of Muyo-Uray in Peru (Fig. 2.3); the Troglodytic town of Pantalica, Sicily in Italy; the Dogon architecture in Senegal (Fig. 2.1), Italian Hill town (Fig. 2.2).; aquatic architecture in Shanghai and Nomadic architectures, etc.

**Figure 2.1.** Architecture of Dogon Village, Senegal

Source: http://naturalhomes.org/african-vernacular.htm)

**Figure 2.2.** Hill towns in Central Italy

Source: https://www.curbed.com/2017/5/17/15649210/car-free-places-city-island

**Figure 2.3.** The Amphitheatre of Muyo-Uray, Peru

Source: https://theurgetowander.com/2012/08/07/the-mystical-inca-ruins-of-moray/

Below are documentations highlighting the significant of some of the world's most popular vernacular buildings classified urban and rural vernacular architecture. While Lucca (1993) established some of vernacular architecture, their locations and importance to the community, Tonna (1997) suggested some to be of cultural significance to the world as a whole.

Lucca (1993) highlighted some of the world's vernacular buildings by pointing out to Girna as a circular or square rural vernacular building, a corbelled stone shelter that is associated with the islands Neolithic heritage of Malta. Its construction technique is similar to structural outlook in several places around the world– part of which include Jabal and Ujlah areas of Libya, Palermo region in Sicily, the Sardinian *nuraghe* of Italy and the Yugoslavian *bunje*.

Some typical Maltese rural vernacular buildings are the farmhouses knowns as “razzett” which are cubic massive farmhouses that are constructed with bricks– this description was made by Lucca (1993).

**Figure 2.4.** The Toda Hut of Ancient, India

Source: https://commons.wikimedia.org/wiki/File:Toda_Hut.JPG

This structure also referred to as Todas Hamlets (Fig. 2.4) is an original representation of Toda community, an ancient Indian tribe which is still in existence. They are constructed in a circular pit lined with stones. It does not have windows and the semi barrel shape huts are so small that people need to bend over to enter from the main door. Its tiny entrance at the front (90cm wide by 90cm tall) serves as a means of protection from the weather as well as the sudden attack of wild animals.

Tonna (1997) cited some urban vernacular architecture especially of the Maltese Islands as a contemporary expression of ancient and modern civilization. Religious culture like the Roman Catholic parish square and Islamic architecture in the Middle East exhibit unique architecture that could be related to the religious culture and historical background (Tonna, 1997). Some of these buildings is a synthetic mixture of both culture and religion and despite westernization their civilization. These ancient vernacular structures are still in existence and portray a cultural significance to many people around the world. Another example is the Nurske building in Norway that is made completely from timber. The particular feature about this pattern is that

the building is raised from the ground level with timbers that have been struck into the soil (see figure 2.5). This was most likely a warehouse where cereals and other food were kept in order to make them protected from pests. Similar buildings exist all around the world Turkey, The U.K, France and Spain.

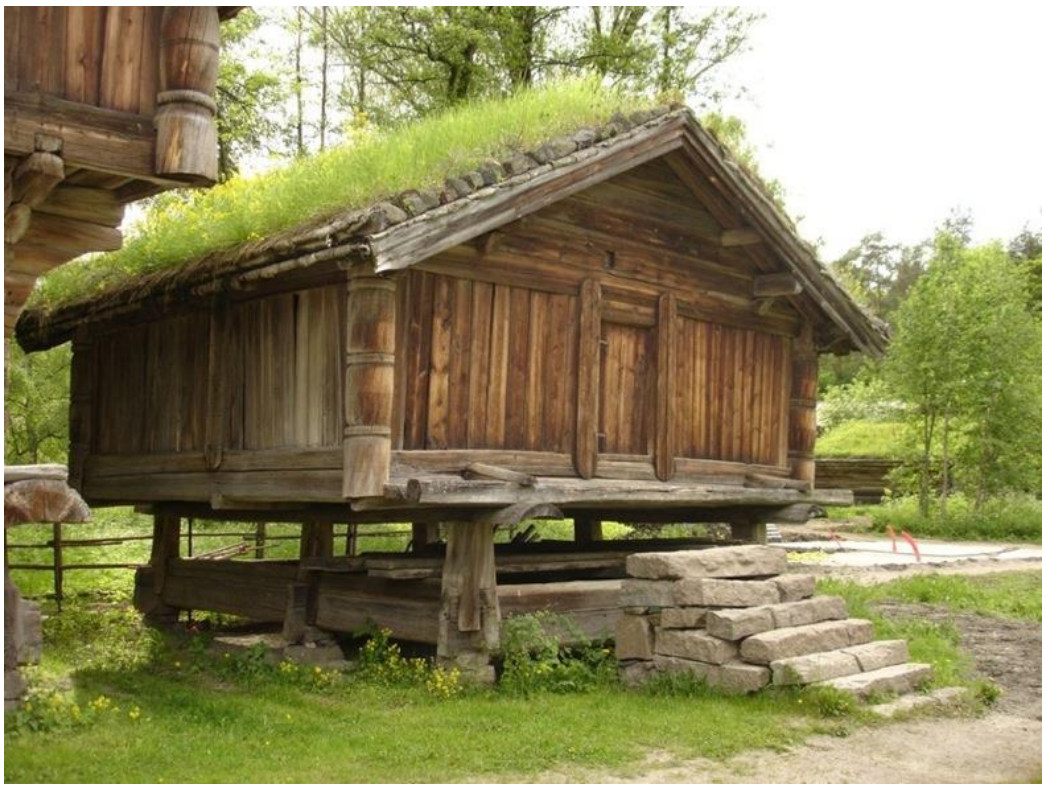

**Figure 2.5.** The Nurske building, Norway

## 2.3. Vernacular Architecture in Africa

Possibly, the pyramids of Egypt are an eminent class of structures in Africa and an early architectural achievement of great cultural value. Moroccan architecture with buildings constructed with the Berber's mud bricks and the Tichitt Walata of Somalia, etc., contribute to the collection of archaeological architecture in Africa (Coquery-Vidrovitch, 2005).

The vernacular architecture of Africa has been internationally accepted and labelled “primitive” as a result of the use of locally available building materials, techniques and technology in terms of construction skills. Meanwhile, the definition of architecture considers acceptability, usability and comfortability all of which these “primitive” African buildings possess. Although these structure lack sophisticated building techniques, they satisfy all the conditions in the definition of architecture in terms of aesthetics, thermal comfort, sustainability and usability (Dayaratne, 2000).

The history of African traditional in architecture has evolved over centuries across different cultures to suit people's sustainable needs. They often use earth (in different forms), timber products, rock and straws constructed together to make a whole, using crude tools and the simplest of methods to erect sustainable dwelling for accommodation or other purposes. The location of the continent between Atlantic Ocean at the west and the Indian Ocean on the east indicates to the availability of natural materials abundant for vernacular architecture from its geographical landscape (Dmochowski, 1990).

Dayaratne (2000) highlighted that the development of vernacular architecture in Africa is a result of readily existing natural materials and possibilities of regeneration of these locally available materials. Although some architecture from prehistoric periods made from stones could still be seen, very little of architecture made from mud brick, adobe and earth have lasted a long time. Such as palaces, monuments, temples and mosques part are mentioned in the later section of the thesis.

Most frequently, the construction procedure of vernacular African buildings was by laying construction materials. Subsequent layers were attained until the previous layers is sufficiently dry and stable to take on further layers. These layers contained bricks previously cast from mud and slurry mixtures of earth as binder and sometimes, mortar for plastering (Osasona 2008, Dmochowski 1990). An example of this method of construction in one of the case studies as has been explained in later section of the thesis. When the layered wall dries and binds into a monolithic whole, additives are mixed or burning of timber on the layer to strengthen the completed layer. Suggestions were made on some of the additives that are culturally adopted as extra binders and addition of strength to vernacular structures. They include: animal (dog and/or cow) dung, animal hair, beaten straw and sometimes, animal skin fat. The procedure involves spreading of the additives by hand to smoothen the facades (Dmochowski, 1990 and Fathy, 1973).

The following are examples of vernacular buildings that were built in historic African cities and most of them still exist at present:

The Wandjire (Fig. 2.6.) is located in Mali and the structure was used for social gathering by the Muslims and the Fulani from Niger Delta and those within the community (Fig: 2.7). This historical building is now being used as a significant cultural and historic centre (Osasona, 2008).

**Figure 2.6.** The Wandjire, Mali

Source: http://www.yourplaceabroad.com/mali/mopti-region/koa/

Gaoui village is located in Chad about 10km north-east of N'Djamena. This village used to be the commercial centre of the Sao civilization and was known for its rich tradition. To keep such heritage of the popular commercial centre, it is presently under conservation as a museum and a cultural attraction centre with significant historical values (Dmochowski 1990) (Fig 2.8).

**Figure 2.7.** Gaoui Museum, Chad

Source: https://www.flickr.com/photos/62982334@N06/5767573328/

## 2.4. Architecture of Palaces

Monarchy is the oldest form of government and in a monarchical society, a king or queen is "Head of State". The monarch undertakes constitutional and representational duties which have developed over thousands of years of history. The sovereign acts as a focus for national or

communal identity, unity and pride which officially recognises success, excellence and supports the ideal of voluntary service and development of the society. These sovereign responsibilities are often passed to other members of the monarch family which warrants the need for a royal abode– hence the palace. The palace is regarded as a place of respect and pride for the royal family thus, the ruler often takes the responsibility to make the palace unique.

In ancient period during which there are no sophisticated machineries to help with construction, people take to local techniques and materials to put up structures and buildings to satisfy their needs. One of the major needs is the dwelling of leaders during monarchical reign. In the light of constructing an abode to suit of royalty of the kings, there was need to construct a sophisticated vernacular architecture that would serve the family and the communities for a very long time – this is one of the intriguing properties of major palaces around the world.

### 2.4.1. The Paliam Palace, India

This palace, which belongs to the Paliam family, is actually referred to as the Paliath Achan[1] Palace and was built by the Dutch. There are two sections of the building that are made available for visitation by the public – "the Paliam Palace" and "the Paliam Nalukettu".

**Figure 2.8.** Paliam Palace Exterior, India

Source: https://www.muzirisheritage.org/kerala-history-museum.php

[1] *Paliath Achan is the name given to the oldest male surviving member of the Paliam family. The Paliath Achan's were the Prime Minister's for the Kingdom of Cochin.*

The Paliam Palace has magnificent architecture with a big elephant carved in wood at the entrance for which people believed was carved from a single wood. The spatial dimension of the palace is such that it allows excellent airflow; a huge veranda and the bedroom also compliment the space within the vernacular architecture.

### 2.4.2. Ba'ale[2] Irefin Palace, Nigeria

Here is an ancient palace over 200 years old in Ibadan (built around 1912), southwest Nigeria and was built completely with mud and timber, and yet still structurally stable. Ibadan is a tropical rainforest region which implies that the palace has endured over two centuries of alternating rainfall and sunshine. The palace possesses unique cultural and historical objects which have attracted the attention of outsiders and urged the Irefin family to continue to put the palace to use – though as residence.

**Figure 2.9.** Ba'ale Irefin Palace, Nigeria

Source: https://afrotourism.com/attraction/irefin-palace/

The Irefin family were warriors during the Oyo dynasty (*refer to section 2.5*) who settled in Ibadan, popularly known as the resting place for travellers. The palace was the abode of a powerful chief – called "Ba'ale Irefin", who ruled from 1912-1914. The palace holds some

[2] *Ba'ale is a title for local rulers, a title similar to a gubernatorial position. Ba'ale are answerable to a king who rules over a larger community where there are several local communities for Ba'ale.*

interesting historical elements that are worth preserving such as the 'spiritual powerhouse' and the judgment room where misunderstandings within the clan are resolved or punishment meted out to the iniquitous.

It is however sad to know that the palace, although still occupied by the Irefin clan, is not treated as a historical object of great worth since there is nobody within the country that preserves historical buildings which could help sustain the heritage of several communities in the country.

### 2.4.3. Gyeongbokgung Palace, South Koera

Gyeongbokgung Palace, built in 1395 and located in northern Seoul, South Korea, was the main royal palace of the Joseon dynasty[3]. Gyeongbokgung Palace is the largest of the five grand palaces built by the Joseon dynasty and it served as the home of Kings of the Joseon dynasty, the Kings' households, and also the government of Joseon.

Gyeongbokgung Palace continued to serve as the main palace of the Joseon dynasty till the premises were ruined by fire during the period of the *Imjin War*[4] and was abandoned for about two centuries. Under the control of Prince Regent Heungseon during the reign of King Gojong in the 19th century, the palace was restored. The Palace has about 7,700 rooms and the architectural principles of ancient Korea were incorporated into the tradition and appearance of the Joseon royal court.

Within the Palace's walls were the Outer Court which contained the offices for the king and state officials; and the Inner Court which included living quarters for the royal family as well as gardens for leisure. Within its extensive precincts were other palaces, large and small, including the Queen's and the Crown prince's residences (Heritage of Korea, 2009).

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[3] *Joseon dynasty: a Korean dynastic kingdom that lasted for approximately five centuries. It was founded by Yi Seong-gye in July 1392 and was replaced by the Korean Empire in October 1897.*

[4] *The Japanese invasions of Korea comprised two separate yet linked operations: an initial invasion in 1592, a brief truce in 1596, and a second invasion in 1597. The conflict ended in 1598 with the withdrawal of the Japanese forces from the Korean Peninsula after a military stalemate in Korea's southern coastal provinces*

**Figure 2.10.** Gyeongbokgung Palace, South Korea

Source: https://tr.pinterest.com/pin/561261172287603407/

### 2.4.4. Dolmabahçe Palace – Istanbul

Dolmabahçe Palace was built by Sultan Abdulmecid[5] who commenced the construction of the palace on June 13th, 1843 and brought it into use on June 7th, 1856, upon completion of surrounding walls. The Palace mainly consists of three parts – State Apartments, Ceremonial Hall and the Imperial Harem. The State Apartment was assigned for administrative affairs of the state; the Imperial Harem was assigned for private lives of the Sultan and his family while the Ceremonial Hall was assigned for exchanging of greetings of sultan with dignitary statesmen and for some important state ceremonies. The main building is three storeys including the basement on the side which is parallel to sea and it is four storeys at the land side involving the Harem quarters with the musandıra (garret) storeys.

Evidently, Western influences have been observed at the style, details and ornaments of the palace which are reflections of the aesthetical values during the imperial period. On the other hand, it is a building complex in which traditional Turkish House style was applied on a large scale with respect to space organization and relations between the rooms and salons. The outside of the building is mode of stone, the interior walls are made of brick and the floors are made of wood. Electricity and central heating were installed in 1910-12 to the place which is

[5] *Sultan Abdulmecid (1839-1861), the thirty first Ottoman Sultan*

open to the contemporary technology. It has a usable floor area of 45,000 square meters, 285 rooms and 44 reception rooms.

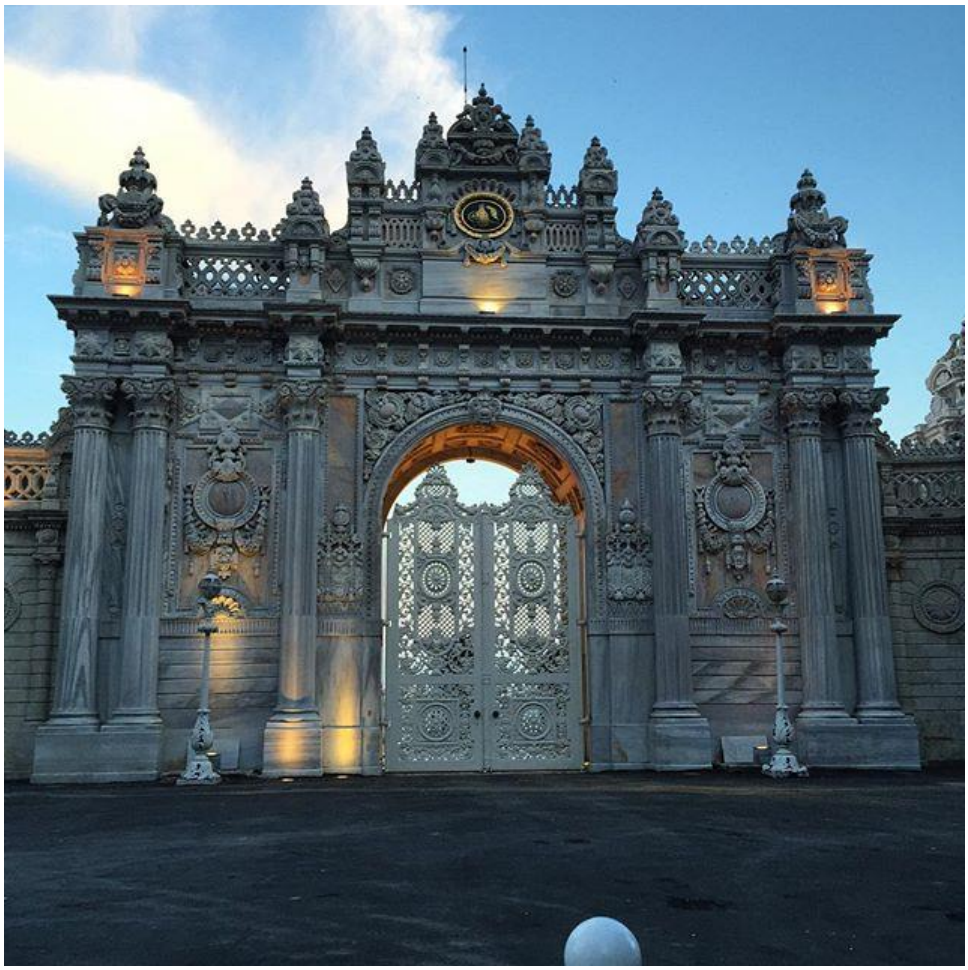


**Figure 2.11.** Dolmabahce Palace, Turkey

Source: https://travel.sygic.com/tr/poi/dolmabahce-sarayi-poi:1894

### 2.4.5. The Topkapi Palace – Istanbul

The Topkapi Palace is a large palace in Istanbul, Turkey, that was the primary residence of the Ottoman Sultans for approximately 400 years (1465-1856) of their 624-year reign. As well as a royal residence, the palace was a setting for state occasions and royal entertainments. It is now a major tourist attraction and contains important holy relics of the Muslim world, including Muhammed's cloak and sword. The Topkapi Palace is among the monuments contained within the "Historic Areas of Istanbul", which became a UNESCO World Heritage Site in 1985, and is described under UNESCO's criterion IV as "*the best example of ensembles of palaces of the Ottoman period*". The palace complex consists of four main courtyards and many smaller

buildings. At its peak, the palace was home to as many as 4,000 people and covered a large area with a long shoreline. It contained mosques, a hospital, bakeries, and a mint. Construction began in 1459, ordered by Sultan Mehmed II, the conqueror of Byzantine Constantinople. It was originally called the New Palace to distinguish it from the previous residence. It received the name “Topkapi” in the 19th century. The complex was expanded over the centuries, with major renovations after the 1509 earthquake and the 1665 fire.

Following the end of the Ottoman Empire in 1923, Topkapi Palace was transformed by a government decree dated April 3, 1924 into a museum of the imperial era. The Topkapi Palace Museum is administered by the Ministry of Culture and Tourism. The palace complex has hundreds of rooms and chambers, but only the most important are accessible to the public today. The complex is guarded by officials of the ministry as well as armed guards of the Turkish military. The palace includes many fine examples of Ottoman architecture. It contains large collections of porcelain, robes, weapons, shields, armour, Ottoman miniatures, Islamic calligraphic manuscripts and murals, as well as a display of Ottoman treasures and jewellery.

**Figure 2.12.** Entrance of the Topkapi Palace, Turkey

Source: https://istanbultourstudio.com/things-to-do/topkapi-palace

### 2.4.6. The Palace of Versailles – France

The Palace of Versailles was the principal residence of the Kings of France from Louis XIV in 1682 until the beginning of the French Revolution[6] in 1789. It is located in the Yvelines Department of the Île-de-France region, about 20km southwest of the centre of Paris[7]. The palace is now a French Historic Monument and a UNESCO World Heritage Site, notable especially for the ceremonial Hall of Mirrors, the jewel-like Opera theatre and royal apartments; for the more intimate royal residences, the Grand Trianon and Petit Trianon located within the park; the small rustic "hamlet" created for Marie Antoinette; and the vast Gardens of Versailles with fountains, canals, and geometric flower beds and groves, laid out by André le Nôtre. The Palace was stripped of all its furnishings after the French Revolution, but many pieces have been returned and many of the palace rooms have been restored. Versailles Palace is capable of holding up to 20,000 people; has about 700 rooms; 1,250 chimneys; more than 2,000 windows and 67 staircases. Not only did the immediate royal family reside there, but the palace also housed many members of the French nobility, as well as all official government offices.


**Figure 2.13.** Versailles Palace, France

Source: https://www.divento.com/en/paris/4987-chateau-de-versailles.html

[6] *The French Revolution was a period of far-reaching social and political upheaval in France and its colonies that lasted from 1789 until 1799.*

[7] *Berger, R. W. (1985). Versailles: The Château of Louis XIV. University Park: The College Arts Association.*

After the death of Maria Theresa of Spain in 1683, Louis XIV undertook the enlargement and remodelling of the royal apartments in the original part of the palace, within the former hunting lodge built by his father. He instructed Mansart to begin the construction of the Royal Chapel of Versailles, which towered over the rest of the palace, Hardouin-Mansart died in 1708. The chapel was completed by his assistant Robert de Cotte in 1710[8].

The extension of the King's "*petit apartment*" necessitated the demolition of the Ambassador's Staircase, one of the most admired features of Louis XIV's regime, which left the Palace without a grand staircase entrance. The following year Louis XV ordered the demolition of the north wing facing onto the *Cour Royale*, which had fallen into serious disrepair. He commissioned Gabriel to rebuild it in a more neoclassical style. The new wing was completed in 1780.

### 2.5. Other Prominent Palaces in Africa

Although seen as an ancient pattern of governing, monarchy is still practiced around the world. While some nations practice full monarchical rulership, some practice partial in which monarchs are geographically installed following the legacy of the communities. In Africa, monarchical rulership is seen as a cultural heritage and a position of honour practice in Malawi, Equatorial Guinea, Chad, Ethiopia, Nigeria, South Africa, Senegal, etc. the following are some of the prominent ancient palaces in Africa.

#### 2.5.1. Al-Gawhara Palace

Also known as Bijou Palace, is a palace and museum in Egypt situated south of the Mosque of Muhammad Ali in the Cairo Citadel and commissioned by Muhammad Ali Pasha in 1814. The palace was designed and constructed by artisans contracted from a variety of countries, including Greece, Turkey, Bulgaria and Albania. The artisans constructed a variety of elements as part of the palace complex which included barracks, schools, an arsenal, a gun-powder factory and a mint. The palace was constructed as a two-storey pavilion in the style of a Turkish *kushk*. On one side of the palace was a *haush* (courtyard) and on the other, were views of the pyramids and the Nile.

[8] Ayers, Andrew (2004). *The Architecture of Paris*. Stuttgart, London: Edition Axel Menges.

**Figure 2.14.** Bijou Palace, Cairo

http://www.islamichistoryandtravel.com/cairo_citadel_al_gawhara_palace_jewel_photos.html

In 1822, a fire destroyed the palace's wooden construction in a blaze that lasted for 2 days. Later, Muhammad Ali had the structure expanded and elaborated upon with the construction of a large marble fountain, columned stone terraces and porticoes, parterres of flower beds and orange groves, and even a menagerie containing a lion, two tigers and an elephant, a gift of the British Lord Hastings.

Two years later, in 1824, fire again damaged the palace after explosions of gunpowder. Muhammad Ali imported large slabs of marble from Italy to build a vestibule, staircase and corridors.

### 2.5.2. Royal Palace of Foumban – Cameroon

The Foumban Royal Palace is a historical building in the city of Foumban[9], capital of Noun. It is the seat of the Kingdom of Bamum, where the Chief-Superior of the peoples of the valley of the East bank of the Noun resides. The royal palace of Foumban, where the king of the Bamum still resides today, was built in 1917. The Palace Museum tells the history of the dynasty of the Bamum kings from 1394 to the present day, with information on the most famous of the Bamum kings, Ibrahim Njoya, who died in 1933 and who created a writing system at the end of the 19th century called Bamum script, (Fig. 2.15.). Some of the major important features in the palace include a multitude of royal gowns, arms, musical instruments, statues, jewellery,

[9] *It is a major town for the Bamoun people and is home to a museum of traditional arts and culture. Foumban is known for its political significance in the formation of Cameroon's history and its cultural, tourism and economic potential.*

masks and colourful bead-covered thrones carved in the shapes of the men who sat on them and seat of power for the Bamoun people.

**Figure 2.15.** Foumban Royal Palace, Cameroon

https://www.britannica.com/place/Foumban

### 2.5.3. The Menelik Palace, Ethiopia

This palatial compound is in Addis Ababa, Ethiopia. For years known as the Gebi, it was the seat of the power of Ethiopia's emperors. Within its confines are several residences, halls, chapels, and working buildings. Today it contains the offices and residence of the Prime Minister of Ethiopia. There are several churches on the palace ground but the most important is the Ta'eka Negest (Resting Place of Kings) Ba'eta Le Mariam Monastery with a large Imperial crown at the top of the dome. The church serves as a mausoleum for Emperor Menelik II, his wife Empress Taitu, and Empress Zewditu, his daughter and eventual successor. Other churches within the grounds are the Se'el Bet Kidane Meheret Church (Our Lady Covenant of Mercy) and the Debre Mengist St. Gabriel Church.

During the rule of Mengistu Haile Mariam, the palace grounds were used as a prison to house many notables of the government of Emperor Haile Selassie, the Emperor himself included.

Built during this time was the *Shengo* Hall, accommodating the country's legislature, and the Presidential Office Building.

**2.16.** The Menelik Palace, Ethiopia

Source: https://tr.pinterest.com/pin/554365035362323372/

In 2010, construction began on a new residence for Prime Minister Meles Zenawi and his family. The project, which was estimated to cost 80 million birr for a two-storey house, was being supervised by Meles's wife, Azeb Mesfin. Also, part of the project were guest houses worth 25 million birr, and a thorough refurbishment of the palace gardens. Today the building is used as an occasional meeting place.

### 2.5.4. The Sultan's Palace, Zanzibar

Bait As-Sahel was destroyed in the Anglo Zanzibar war of 1896, is one of the main historical buildings of Stone Town, Zanzibar, Tanzania. It is a 3-story building with merlon-decorated white walls, located in Mizingani Road, on the seafront, between the House of Wonders and the Old Dispensary.

The palace was built in late 19th century to serve as a residence for the Sultan's family. After the Zanzibar Revolution, in 1964 it was formally renamed to *People's Palace* and used as a government seat. In 1994, it became a museum about the Zanzibari royal family and history.

Zanzibar is a small island 20 miles of the central east African coast. It has a tumultuous history of being a central location for the slave trade ran by Arab rulers in the late 18th century.

One floor of the museum is dedicated to Sultan Khalifa bin Harub; another one to Sayyida Salme, best known as Emily Ruete, former Zanzibari princess who fled from the sultanate to relocate in Europe with her husband; the exhibits include some of her writings, clothes and daily life accessories.

**2.17.** The Sultanate, Zanzibar

http://blog.swaliafrica.com/the-sultanate-of-zanzibar/

## 2.6. Historical Palaces in Nigeria

As stated in previous section, some parts of Nigeria are still under monarchical rulership, leaders whom are seen as second tier to the government. Although the rulers are second to the government, they play important role in determining political stance of the state within which

they reign. Powerful monarchs in Nigeria are in states like Sokoto, Osun, Oyo and Edo state; some of which are listed below.

### 2.6.1. The Palace of Oyo Empire

The Oyo palace is one of the main cultural centres of the city, where all cultural forms are widely practiced and stored. The palace is decorated with works of art, murals and various forms of sculpture, including the posts of wood and carved panelled doors, symbolizing the status of wealth and royalty. The palace of the Alaafin Oyo is the largest Yoruba royal residence and has the largest number of Kobis (corridors). This complex corridor system allows the Alaafin to move in without exiting to the outside. Within the complex, there are shrines of Sango, Obatala, Ogun and Imole. Besides the Alaafin residence, and shrines, the complex also houses the palace's throne room, offices, housing officials, the dwellings of the queens, the court, the room Aganju where confer the Oyes (titles), the garden, the Akesan market, among other spaces. The vernacular architectural designs are superb among ancient palaces in the country. It is the largest in Yorubaland as it has in it over 200 rooms (Fig. 2.18). The palace surroundings also consist of residences of Alaafin's functionaries, and the ancient Akesan market, thus making it impossible for any external invasion during the old oyo empire. The Oyo palace also houses important works of art and antiques of the Yoruba. It is also the place where they are performed and traditional touches daily songs of praise and communication to the king, informing him about the external events of the palace. Touch is one of the most significant forms of communication culture of Oyo. Touch inside the palace is a real privilege and shows the continuation of the cultural practices of the Oyo Empire. This palace is a great testimony to the architectural ingenuity of the Yoruba and their empire. The king of the Oyo Empire is known as Alaafin of Oyo. Among the most powerful and influential monarchical titles attainable in Nigeria is the position of the Alaafin of Oyo. This position is very powerful and the title owner until recently was also the Chairman of the Council of Obas and the Chiefs in Oyo State. This was however changed by the former Governor of Oyo State, Adebayo Alao-Akala, and a rotational arrangement was adopted, (Fig. 2.19).


**Figure 2.18.** First (Old) palace of the New Oyo Empire

**Figure 2.19.** The New Oyo Palace

http://freedomonline.com.ng/alaafins-palace-a-deserving-national-monument/

### 2.6.2. Benin Palace

The king of Benin is also referred to as the Omo N'Oba. The power of the ruler of the Edo[10] people stretches to politicians too and he is often called upon by politicians to intervene in important political issues.

UNESCO Heritage Site listed the palace in 1999 among the historical buildings in Africa. This ancient building was first constructed around 13th century by King Ewedo of Benin but the palace was rebuilt by his successor, King Eweka II in the 20th. This landmark site is among the enduring legacies of one of the most powerful empires in West Africa during the Yoruba dynasty (Fig. 2.20).

**Figure 2.20.** Oba of Benin Palace, Edo

### 2.6.3. The Palace of Ooni of Ife

The magnificent palace of the Ooni of Ife otherwise known as Ile Oduduwa, named after the first king of Yoruba race. The palace is an in-depth reflection of ancient Ife because the palace existed alongside the city as far back as 500 BC. The palace is a sacred place where you do not just indiscriminately wander. Many special rites and rituals had to be performed before Ooni

[10] *Edo is often referred to as the most cultured state in Southern Nigeria with over 50 indigenous languages spoken between the Edo people.*

began his residence in the palace. The Ooni of Ife palace serves as both the residence and the court of the traditional ruler of Ife, the birthplace of the Yoruba race. The stately palace lies in the ancient city of Ife. It is believed that this powerful ruler is known to play a strong role in determining who the governor of Osun state becomes. Recently, the reconstruction of a new residential complex inside the palace for the king was completed which took him about five months to completion (Fig. 2.21).

**Figure 2.21.** Old Palace of Ooni of Ife

Source: https://oloolutof.wordpress.com/2018/01/03/ooni-of-ife-palace/

Table 2.1 below summarises the similarities and differences in the palaces highlighted within the context of the study. It could be seen that all the palaces have unique architecture which were considered sophisticated during the period of construction to meet the pride of the royal family. Several of the palaces were either in use or conserved for reuse for national benefits. But adaptive reuse has not caught the attention of authorities in Nigeria. The pattern of monarchical rulership in Ibadan[11] has led to the abandonment of the three palaces cited within the city.

[11] *Monarchy rulership in Ibadan city is not passed within a royal family but follows a political arrangement in which a new ruler comes to reign after the demise of a predecessor. The pattern of rulership thus, calls for the need of a current royal family to build a simple palace with few rooms that can only contain the members of the family.*

| Palaces | Cultural Heritage | Multiple Rooms | Continuous Use | Aesthetic/ Gardens | Redesign / Renovation | Communal Integrity | Location | Unique Architecture |
|---|---|---|---|---|---|---|---|---|
| Topkapi | Yes | Over 300 | Conserved | Yes | Yes | UNESCO site | Turkey | Yes |
| Versailles | Yes | 700 | Conserved | Yes | Yes | UNESCO site | France | Yes |
| Abass Aleshinloye | Yes | Nil | Abandoned | Nil | Partial | History | Nigeria | Yes |
| Gyeongbokgung | Yes | 7,700 | Conserved | Yes | Yes | Tourism | South Korea | Yes |
| Irefin | Yes | Nil | Abandoned | Nil | Nil | History | Nigeria | Yes |
| Dolmabahce | Yes | 329 | Conserved | Yes | Yes | Museum | Turkey | Yes |
| The Palace of Oyo Empire | Yes | Over 200 | Yes | Yes | Yes | History | Nigeria | Yes |
| Paliam | Yes | Yes | Conserved | Yes | Yes | Tourism | India | Yes |
| Oba of Benin | Yes | Yes | Yes | Yes | Yes | Useful | Nigeria | Yes |
| Al - Gawhara | Yes | Nil | Conserved | Nil | Yes | Museum | Egypt | Yes |
| Foumban | Yes | Nil | --- | --- | --- | --- | Cameroon | Yes |
| Menelik | Yes | --- | Conserved | Yes | Yes | Government Offices | Ethiopia | Yes |
| Sultan’s Palace | Yes | 15 | Conserved | Yes | Yes | Government Seat | Tanzania | Yes |

**Table 2.1.** Summary of example of 13 palaces

From the list of palaces in table 2.1, it is undoubtedly arguable that generally, almost all the palaces are enormous in size and significant in their own capacity. It is important to point out that the similar criteria that define vernacular architectures are the techniques of construction, use of local materials and artisans rather than expert architects. Although the different palaces

are situated in places of different civilization, local materials were common in the construction of the palaces which indicates their qualification as being a type of vernacular architecture. The sophistication applied to the construction of the palaces with the use of local materials and crude methods of construction is what vernacular architecture depicts which is peculiar with all the palaces. Although renovated, some of the palaces still hold heritage elements of important and significant historical background that links the past with the present.

## 2.7. History and Transition of Architecture in Nigeria


**Figure 2.22.** Map of Nigeria and some neighbouring Africa countries

http://doctorpence.blogspot.com/2015/08/map-on-monday-nigeria.html

There are connections between traditional architectures and contemporary architecture of Nigeria albeit very weak. According to Northerners (the *Hausa* as will be explained in later section), Islam[12] is believed to play major influential role in modern architecture of Northern region of Nigeria while the incursion of liberated slaves, mostly from Brazil, and the presence of Colonial masters have influenced the architecture of the Southern parts of the country. The peculiarity of the pattern of architecture before colonization and return of liberated slaves is

[12] *The major religion of Northern part of Nigeria and supposed influence of modern architecture in the region influenced by the Arabs.*

that, they are majorly constructed with stone, earth, thatched roofing and materials that are locally available (Tofa, 2011).

The influence of the British Colonial masters in Nigeria started with the trade in black slaves which began in the 18th century. However, this came to an end in the mid-19th century. Shokpeke (2009) stated that the major reason which led to Nigeria being Colonized by Britain was to get a constant supply of raw materials as cotton for their textile factories, palm oil and kernel for making soap and margarine, rubber for making tyres with other products, timber for furniture making with coal, tin and other raw materials which were in abundance in Nigeria. During the period of the British Colonials in Nigeria, diverse forms of architecture were introduced into the country, these new forms of building construction varied from the traditional forms of construction which were known in the country. They were either prefabricated buildings i.e. made in Britain and transported down to be assembled in Nigeria having roof overhangs with verandas, some of the buildings were however raised up on stilts (Anselem et al.,2010). Basically, the outlook of buildings was said to have changed in Nigeria during the British Colonial Period due to the importation of new materials which were used in construction of buildings, materials like corrugated Iron sheets, Aluminium, cement, processed timber, synthetic paints were imported (Ogunsote, 2007).

Many of the surviving vernacular building in Nigeria are those constructed when the country was under regional rulership. The war tower in Benin is a major monument of significant importance to people. Those historic buildings and structures did not survive the test of weather and time and lack proper maintenance and restoration techniques. It is important to note that quite a number of vernacular buildings in Nigeria that were used as palaces are still very much in good shape and two of them have been considered as case studies for this research.

Nigeria is basically categorised into three main regions or ethnicities which comprise of the Hausa, Igbo and Yoruba (*See fig. 2.23*).


**Figure 2.23.** Ethnicities Map of Nigeria

Source: https://www.researchgate.net/figure/Map-of-Nigeria-Showing-the-Broad-Distribution-of-Major-Ethnic-Groups6-Source_fig3_319987212

The Hausa-Fulani is the largest by landmass and population. Engraving is particular to the Hausa culture and it involves incision of a design by cutting grooves into a hard and usually flat surface and walls. Traces of this type of design feature have been seen as far back as 1000 BC (Australian Geographic, 2014). Although vernacular architecture is defined to be ancient design and through traditional techniques, the Hausa's wall engravings are still much in practice and are designed by traditional builders and professional artisans that are vastly skilled with such design techniques. They are referred to as hand engravers- they minimally outline the pattern directly on wall surfaces (Dmochowski, 1990). This type of vernacular architectural decoration (interior and exterior) (Figure 2.24 and 2.25) adopted by the Hausa is classified by the orientation and outlook of the design into calligraphy, simple surface design and ornamental, where all contribute to the wealth and social prestige of building façades (Adamu, 2005; Agboola and Zango, 2014).

**Figure 2.24.** Facade of a Vernacular Building in Northern part of Nigeria

Source: https://tr.pinterest.com/pin/450711875183630132

**Figure 2.25.** Interior decorations, Architecture in the Northern part of Nigeria

The second region with yet another fascinating tradition is the Igbo ethnicity. They originally occupy the Eastern part of the country down to South (A major argument is that people in the Southern region of the country believe their zone to be totally considered as a region). The Igbo have round and rectangular architectural patterns and these patterns are still in existence in rural settings of the region. Egonwa (1994) explained that these architectural patterns were used to construct colonial buildings, but with burnt bricks or cement blocks rather than mud. In this region of the country, major decoration patterns are traditional paintings on the exterior walls of their royal building used by chiefs and leaders (Figure 2.26).

**Figure 2.26.** The Imbari of the Igbo Region of Nigeria

https://africa.uima.uiowa.edu/topic-essays/show/14?start=16

Lastly, the Yoruba region/ethnicity of the country occupies the western part of the country. Although there are still traces of structures in ancient architectural forms, there is vast industrialization and modern structures on the rise. The ancient Yoruba settlement were vast in architecture and could be seen during the Oyo and Ile-Ife dynasty (within the periods of 1608–1800 and $12^{th}$–$14^{th}$ century respectively). Their territories were marked by shrines, markets, farmlands residents and palaces. These two dynasties engaged in trade with other people from different part of the continent and they are first to adopt architectural patterns that were seen as of high sophistication at the time (Awotona, 1986). The exposure to these patterns triggered the interests of Yoruba individuals and chiefs to construct residents and palaces of great architectural values. Major examples of fascinating historic architecture include the White House in Badagry (Fig. 2.27) (Around 1842 by Reverend Henry Townsend), the Christened Ebun House and the first three-storey building in 1914. Some typical Yoruba buildings clearly carried western influences (See fig. 2.28).

**Figure 2.27.** White House, Badagry Lagos (First Two Storey Building in Nigeria, 1815)

Source: http://people.wku.edu/johnston.njoku/arochukwu/badagry/

**Figure 2.28.** A Typical Traditional Yoruba Building

Source: http://alaayemore.tumblr.com/post/149924392221/afro-brazilian-architecture-also-called

The chiefs' palaces and market places occupied the central areas of cities like Ile-Ife, Oyo, Ilesha, Ibadan and Ekiti of the Yoruba region. The settlement can be described as typical for a compound family. It consisted of a large house, mostly in square or rectangular shape and bounded by high walls covered with thatches as roofs. (Izomoh, 1997). The following examples of Yoruba architecture points out the trend of ancient architecture practiced by the tribe following their exposure in trade engagement with foreign traditions. The two examples cited below (which are also the case studies of this thesis) exhibit major characteristics of the typical Yoruba historic buildings.

## 2.8. Ibadan and the Community of the Case Studies

Ibadan is a capital city of Oyo-state in the South-western part of Nigeria. The city emerged as a by-product of the early nineteenth century political crisis in Yorubaland. The political upheavals in Yorubaland during that period were fraught with serious consequences which are still militating against the unity of the Yoruba race. Ibadan held sway as a force to be reckoned with in Yorubaland since its foundation in 1829 to the period when colonial rule was established in Yorubaland about 1893. It fought several wars to establish itself and maintain the independence of the Yoruba race from the Fulani jihadist that ravaged northern part of

Yorubaland in the nineteenth century. The focus of this paper is the role of slaves in the execution of war in Yorubaland in the nineteenth century with particular emphasis on Ibadan.

The ancient Ibadan settlements were peopled by a section of Egba Aguras, who were known as Ibadan Soge. The settlement lay between the Ijebu and Egba towns in the forest belt and Oyo in the Savannah belt. Ibadan was created in 1829 as a war camp for warriors coming from Oyo, Ife and Ijebu. The city is a forest site made up of several ranges of hills, varying in elevation from 160 to 275 meters (Fourchard, 2008).

Ibadan, (pronounced as E- baa- dawn) the present capital of Oyo State, is the third most populous state in Nigeria after Lagos and Kano with 3.5 million dwellers today. In the 1960s, Ibadan was known to be the largest city in Africa after Cairo (Egypt) and Johannesburg in South Africa. The Yoruba people are the main inhabitant of this popular city, Ibadan, which was formally called Eba Odan (the city at the edge of a Savannah) at the point of its creation. Ibadan, located in the south-western part of Nigeria served as the home for trade, commerce and fashion in the 60s and 70s making Lagos a perfect rival. Ibadan was also the centre for administration of the Western region during the colonial era.

The origin of this great city, Ibadan, was traced to the reign of the great old Oyo empire (Oyo-Ile). It was said that the Alaafin (king) of the Oyo empire ordered Lagelu who was then the commander of armed forces (Are-Ona-Kakanfo) in Oyo, and some of his best men in Oyo, Ilesa and Ogbomosho to build a war camp for warriors coming from the Ijebu, Ife and Egba kingdoms. Jagun Lagelu and his men settled in Àwótán, in Apete (presently located in the Ido local government area) and established a peaceful city named Eba Odan. Later, the city was destroyed by the Oyo armies for violating the customs of Yorubaland. The people of Eba Odan (Ibadanland) were said to have humiliated an Egungun at the market place. The Egungun was accidentally disrobed which resulted into an abominable mockery from Eba Odan women and children. When the news of the incident reached the Alaafin of Oyo, he ordered his men to turn Eba Odan into complete rubble for committing such disrespectful and abominable offence.


**Figure 2.29.** Map of Nigeria showing Oyo State

Source: https://www.researchgate.net/figure/Map-of-Nigeria-showing-Oyo-State-in-which-Bere-Community-is-located_fig1_275495813

### 2.8.1. Abass Aleshinloye Palace – (1879)

Olubadan is a monarchical leadership role in Ibadan territory of the Oyo state. This palace belongs to and was named after the first Olubadan (Lord of Ibadan), Abass Okunola Aleshinloye. Situated in an area referred to by the locals as Isale Ijebu Idi Arere, the palace was reaching almost a century and half old during the collation of the data. The *Magaji* of the family revealed during the interview that the castle was constructed by Julius Berger during the construction of the famous Mapo Hall (1879) with its major construction material being mud bricks while the stairs were made from timber at a total construction cost of about £300 (At the time the Naira to Pounds exchange rate was unitary). With fascinating historic facades, the palace was abandoned around 1946 after the decease of the Olubadan for which the property was built. This points the fact that the palace was used for 67 years. According to inspection, all structural members of the palace are complete, mud blocks with cement plasters and major maintenance and renovations has been carried out by members of the family, (Fig. 2.30). The correspondents declared that after abandonment, the facility has not been put to any use but the historic value of the palace has captured the attention of local movie producers and directors who had featured the palace in few historic movies. When asked why the palace was left unused, the correspondents explained that the conservation of the palace is their major interest

and putting the building to adaptation might alter the value of the castle. This is further examined in a later section of the thesis.

**Figure 2.30.** Facades of the Aleshinloye Palace (1879), Ibadan, Nigeria

### 2.8.2. Aare Latosa Obadoke Palace – (1818)

Years before the reign of Olubadan, the territories of Ibadan were ruled by Aare (chiefs) to one of which this particular palace belonged to – Aare Latosa Obadoke. Aare Latosa was a warrior and as he went to war and returned, he extended the size of his palace as a sign of respect. Aare Latosa Palace, built by the warrior himself around 1818, is a combination of both vernacular architecture and contemporary styles at the time of its construction. Located in an area locally referred to as Oke Aremo Beere of Ibadan, the palace was used for its original purpose for about 50 years after the death of the warrior. With an interesting vernacular structure, the palace was totally constructed with mud and the method of construction was somewhat in layers following a procedure known as "*Owe*" and "*Aaro*"[13]. This process was used in ancient times in order to reduce cost of labour. It involves member of a group taking turns in supporting other members of the group when the need arises. Compaction was done manually by matching on the mud and left to dry for about five days after which a huge inferno is set on the compacted part/layer by burning firewood. This process assisted in the baking of the mud. The construction of the residents followed this consequent procedure, layer after layer, until completion.

[13] *Owe and Aaro is a method of labour in which a group go about assisting every member of the group with labour they would have originally paid for.*

According to an interview conducted by the author, the correspondent (a descendant of the warrior) declared that until present, the palace has survived up to 199 years. After abandonment, the palace has not been adopted to any reuse. The correspondent explained that the power of the warrior has feared the thought to put the building to reuse, but also pointed out that there have been several occasions of excursion from schools. When asked why the palace was left unused, the correspondents explained that the conservation of the historic heritage of the warrior and the palace itself is the major concern of the descendants, buttressing that the palace had also been used for its major purpose by two descendants of the warrior when they attained the position of Aare of Ibadan. The facade of the building displayed below (Fig. 2.31) shows a recent development of a sandcrete block elevation on the original palace in which some other structural members of the palace are supported by sandcrete blocks.

**Figure 2.31.** Facades of the Aare Latosa Palace, Ibadan, Nigeria

## 2.9. Other Historical Buildings in Nigeria

### 2.9.1. Mary Slessor House, Calabar

The modest residence was built in the 19$^{th}$ century which belonged to the Scottish missionary, Mary Mitchell Slessor, best known for her advocacy that halted the killing of twins in Calabar. With its old thatched roof and austere façade once, the outcome of the importance of Mary Slessor's intervention had made the house in Ekenge, Calabar, to remain with important heritage to honour her selfless service and courage (Fig. 2.32).

**Figure 2.32.** Mary Slessor Building, Calabar, Nigeria

https://www.omenkaonline.com/tourist-guide-calabar/

### 2.9.2. First Storey Building in Nigeria, Badagry

Widely believed to be the first storey building in Nigeria erected by foreigners, this building had once been used a Methodist Church primary school. Its foundations of the building were laid by the Henry Townsend in 1842 but completed in 1845 by Rev. Bernard Freeman. This historic building later housed the first African Church Missionary Society bishop, Samuel Ajayi Crowther (Fig. 2.33).

**Figure 2.33.** First Two Storey Building in Nigeria, Badagry

Source: http://enroute.ng/first-storey-building-in-nigeria/

### 2.9.3 Ancient Kano City Walls

The ancient city walls of Kano were constructed and used solely as a defensive structure during war to protect the inhabitants of the city from external attacks. Construction of the walls was started by Sakri Gijimasu, the 3$^{rd}$ Emir of Kano around 1095, AD but was completed sometime in the 14$^{th}$ century, (Fig. 234).

**Figure 2.34.** Ancient Kano City Walls, Kano Nigeria

### 2.9.4 First Presbyterian Church, Calabar

The first Presbyterian Church in Nigeria was created by the Scotish named missionary Rev. Hope Masterson Waddell around 1846 and has endured as a permanent legacy of missionary work within the country. The denomination has ten synods, more than 50 presbyteries and over 4,000 congregations, and almost 8,000 ministers and 5,806 690 members across the country. In 1858 the Presbytery of Biafra was formed. The Synod of Biafra formed in 1921. The church developed rapidly, when the Presbyterian Church of Biafra was established, with the Synod as the highest court. The church became independent. The Presbyterian Church of Biafra became the Presbyterian Church in East Nigeria in 1952. On 16 June 1960 the Presbyterian Church of Nigeria was born. In 1987 the General Assembly was constituted with two Synods

**Figure 2.35.** First Presbyterian Church, Calabar, Nigeria

Though the size of palaces listed in table *2.1* varies with the intent of the use and the community where they are situated, similarities are persistent in the pattern of construction and allocation of heritage value to the elements of the palaces. The similarities could be traced to the fact that local materials were available during construction and local techniques were adopted in construction procedure which implies the qualification of the palaces as vernacular architecture. As defined, technique and materials are the main factors used to consider a building as vernacular architecture. Thus, the case studies exhibit tremendous similarities with other palaces around that world and the pattern, technique and material of construction qualify them as genuine vernacular architecture. The size of palaces in Ibadan (thus the case studies) is smaller in comparison to other palaces around the world because of the pattern of monarchical rulership. Reign is withdrawn from a family and passed on to another family after the demise of a ruler thus, present kings only build palaces that can cater for their need according to their capabilities.

Apart from the economic, environmental and sociocultural benefits that are derivable from conservation of historic architecture, their heritage is conserved and it creates a link between the past and the present. Considering the age and exposure of historic architecture to external and environmental factors, the elements are thus weaker compared to new buildings and caution should be taken when posing a reuse to the buildings. Appropriate method of conservation applicable to any historic building after considering their structural stability are explained in later section of the work. It is important to note structural stability of the buildings as suggested so as not to apply an approach that could be detrimental to the status of the elements.

# CHAPTER 3

# BUILDING ADAPTATION AND SUSTINABLE DEVELOPMENT

## 3.1. Concept of Adaptive Reuse

It is important to highlight accepted definitions of adaptive reuse of buildings and the procedures in building adaptation. However, there are several points of view from which the concept of adaptive reuse has been seen thus giving several definitions to practice. Interestingly, these diversely different definitions all point to the same simple concept of adaptive reuse and they all agree on practice procedures that would be highlighted subsequently.

In the description of adaptive reuse, Burchell and Listokin (1981) described the practice as a regeneration approach that considers the potentials of an abandoned structure/building and creates plans for management and reuse of the abandoned buildings. The definition of Burchell and Listokin was buttressed by Jessen and Schneider (2003) when they pointed out that the feature of utmost importance in defining adaptive reuse of building is the appreciation of the value of the building. The process considers the wellbeing of the land and "reintroduction" of the building into a location in which the ancient building becomes alienated as a result of its uniqueness from its aesthetics, socio-cultural and economic value resulting from the new use it would be (or has been) put to.

Jacobs (1961) identified that adaptive reuse can be applied to any building when possibilities and potentials of the building are considered. The ancient construction techniques/ideas used for the construction of old building could be applied to new ones and historic/ancient building should be treated with great importance in society. Needs for professional interests on the field of adaptive reuse of building are increasing as old buildings require more attention that new counterparts. According to research conducted by Department of Environment and Heritage (2004: p. 4) revealed that the cost of building adaptation is considerably cheaper than cost required to demolish and rebuild another structure. Gregory (2004) and Pearce (2004), among other experts like Douglas (2002: p.10-15), Vanegas (1995) and Ball (2002: pp. 92-110) agreed that interests in adaptive reuse of building is seemingly on the increase, because old building are cheaper to convert to new use through building adaptation than the cost required for building demolition and reconstruction of a new facility. Thus, in this aspect, Bromley (2005),

Kohler (1995) and Rohracher (2001) all agree that performance upgrading existing buildings have an important impact on building and environment sustainability.

Latham (2000) defined building adaptation as a process which involves performance upgrade of the old original building to fit modern standards while keeping as much features as possible of the original building. This might affect user requirements as the new use of the old building will require much care and mild utility. Conservatively, Douglas (2002) put that when converting a building into a modified new use, the process requires an existing building to be put into some modified changes and adaptiveness to suit the new use.

Dolnick and Davidson (1999) defined adaptive reuse of building as the rehabilitation, renovation and regeneration of the existing building to be subjected to new uses other than the intended uses for which it was previously built for. In 2004, Department of Environment and Heritage (DEH) defined building adaptation as a process that changes an abandoned and unproductive building into an improvised new use in order to serve a different purpose other than the original purpose for which it was built for. Thus, adaptive reuse is the practice of making a "useless" building useful once again, but for a different purpose.

While discussing sustainability, DEH (2004) claimed that to define sustainability is to explain the continuous improvement of existing building to suit modern standards. It also involves the process to achieve this continuous improvement. The explanation was based on the fact that adaptive reuse of an old building plays an important role in sustainable development of the community. This is further explained on benefits of building adaptation in later section of the thesis. The practice also helps avoid waste generation and circumventing/reducing the cost incurred in building demolition and construction of new facilities. From the foregoing, adaptive reuse and sustainability becomes so useful in the production of valuable resources for the community. This results from the reuse of unproductive facilities and properties. Environmental Impact Assessment advocates adaptive reuse in that there is substantial reduction in land acquisition, improvement in the invigoration of an existing building and neighbourhood and management of costs in the construction of a new building (English Heritage, 2004).

There is a global increasing need for new building resulting from the growing global population. Conservation and adaptation of historic/ancient buildings can play an important role in the provision of needed building facilities and the regeneration process. Rudlin and Falk (1999: pp.264) argued that conservation and reuse of ancient and historic buildings provide

justifiable options to strengthen urban revitalization and there are several socio-economic, environmental and cultural benefits that could be derived from practice. This is explained in a later section of the thesis. Bullen (2007); Gallant and Blickle (2005) and Ball (2002) all agreed that there have been records of significant changes and that demolition of historic buildings in countries like Sweden, England and the United States has reduced costs. They have opted for building adaptation and rehabilitation of unused historical buildings- thus, reducing demolition costs and the need to construct new buildings. Gregory (2004) and Douglas (2002) highlighted that the awareness to reduce demolition of historical buildings is an important trend in extending of useful life of existing buildings. Thus, environmental sustainability is reached and the need for construction materials reduced as well as environmental pollution all of which could also of reduce energy consumption.

Jacobs (1961) explained that any development or settlement will fail its purpose if there is no adequate provision to continue the lifestyle of such development. Hence, a major likelihood of a particular city to maintain its lifestyle involves the conservation and rehabilitation of its historic buildings. Thus, encouraging the public in acquiring and occupying a vacant historic structure and building. This cannot be achieved without adaptation and the practice is gaining impressive recognition as an effective approach to sustain and retain the historical legacy on ancient buildings and cities (Pickard, 1996; Kohler, 1999; Douglas, 2002 and Gregory, 2004).

When discussing the adaptation of historic building, it is important to highlight the benefits that could be derived from the practice in which they are both tangible and intangible. Although one could argue that the community seems to be a major benefactor of adaptation, individuals, local governments, developers and the community all benefit from the advantages building adaptation of historic buildings provide. Choi (2010) summarized that developers can save project costs resulting from the practice of reuse of existing buildings in which construction of new buildings would require demolition and minimum cost for building. While Choi classified the explained benefit as economical, he also pointed out that governments can protect their communities against pollution resulting from construction of new project, manufacturing of construction materials and generation of wastes (which could be from demolition and production of construction materials).

## 3.2. Theory of Building Adaptation

As established in earlier section of the thesis, the concept of adaptive reuse of ancient building dates back to 1980's. Although the race for sustainable environment has only begun in recent years, there have been theories, ideas and advocacies that date back to the concept itself. Cunnington (1988) reported that the alteration/improvement of existing/abandoned buildings to suit new purposes was practiced during Renaissance, when monuments were transformed into industrial and military functions. The report also explained that during the French Revolution, religious buildings were reused for economic and defensive purposes like industrial and military uses. Despite the inventories and interventions, during these periods, these were done without intent to preserve historic value of these buildings. The motive behind adaptive reuse was basically social and economic benefits (functional and financial intent).

The introduction of a theoretical approach to adaptive reuse was established as far back as the 19$^{th}$ century Eugène Emmanuel Viollet-le-Duc explained that adaptive reuse is a way of preserving historical value(s) of monuments. His argument was that the best way to maintain structural stability and sustenance for a building was subject to its reuse. He pointed out that abandoning existing building because of their age and ancient fabric only created environmental disorientation.

The ideas of Viollet-le-Duc were examined from a rather different perspective to argue that it is impossible to fully restore a structure of great architecture. It was proposed that frequent care and maintenance instead of restoration are beneficial to conservation of historic buildings. The result of the study showed that during restoration, some important parts of a building might be sacrificed to make it fit for new uses (Ruskin and William Morris, 1849).

The ideas of Violet-le-Duc and Riskin make two opposing theories. This was discussed by Riegl (1928) as he described that the discrepancies in the theories are a result of different level of adherence to preservation of historic values of monuments. He then categorized different types of values into commemorative values. This included intentional commemorative values, historic values and age values of monuments, as well as present-day values which include newness values, art values and use values (Riegl, 1928).

The following theoretical approaches have been highlighted to be useful in building, considering different level of adherence to historic preservation of a building. It is important to note that the two arguments highlighted above have led to emerge from these theories.

Whichever approach to be applied for a particular building's adaptation will considered as rudiment requirement(s) that satisfy its consideration.

### 3.2.1. Typological Approach

The introductory essay by Cantacizino (1975) explained the historic background of adaptive reuse and the roles it plays within current building conservation practice- *an approach that involves the organisation of buildings according to their construction type before they are converted for new uses*. Contacizino again in 1989 made a more elaborate categorization of several building types which other authors like Douglas (2006) followed to present different case studies to categorise buildings according to their types, and space. Douglas organised building adaptation according to typology of the host space.

The works of Fisher (1992) and Powell (1999) are part of the numerous studies that applied the typological approach theory for adaptive reuse of specific building types like religious buildings and industrial buildings respectively. They applied the typological approach theory in a slightly different manner by organizing a selection of case studies according to their modern use. From this same theory, their emphases were on modern architecture, the types of buildings and interventions, rather than the historical value of the buildings.

### 3.2.2. Technical Approach

Some authors have yet approached building adaptation from rather primary perspectives by asking technical questions which have led to the development of several "guidebooks"- *an approach that view building adaptations from how much the existing building allow a new function(s) to be imposed on it*. Highfield (1987 and 2000) published "*The Rehabilitation and Re-use of old Buildings*" with the explanations of the advantages and benefits of rehabilitation by differentiating between domestic and nondomestic buildings. In their publication, there is a technical chapter which discussed enhancement of thermal performance, fire resistance, prevention of water/moisture penetration, sound performance, freezing and thawing in concrete structures and timber decay. All these improvements were suggested using case studies and an approach he termed as "technical point of view".

Douglas agrees with Highfield and he has carried out extensive work on adaptive reuse from the technical aspects. The major implication of the technical approach is the protection of the existing old building from new uses, without giving much attention to heritage/historic values

and conservation of the building. Meanwhile, part of the technical approach includes conservation of the building (since the theory deals with the protection of the building), architectural and engineering features of the building (Giebeler et al, 2009; Rabun and Kelso, 2009).

### 3.2.3. Strategic Approach

The strategic approach theory focuses and pays more emphasis *on the process and strategies involved in converting significant buildings for new uses- an approach that considers historical significance of materials in the existing building*. Machado (1976) presented some suggestive materials in his essay "*Architecture as Palimpsest*" that could be used as concepts for considering materials that are of specific significance during remodelling or restoration. Robert (1989) also used the comparison of the palimpsest (although not explicitly as used in Machado's article) to describe the concept of building adaptation. He described what is known as "*seven concepts of conversion*" in building adaptation while paying attention to historic diversity of the building to be converted. The seven concepts described by Robert are:

1. Building another structure within the existing building
2. Building over an existing structure, keeping in mind the type of new structure the existing one can take
3. Building around
4. Building alongside
5. Recycling materials/vestiges
6. Adapting to a new function and
7. Building in the style of the existing structure.

It could be noted that these concepts refer to specific physical intervention and attempt to retain as much historical materials of the existing building as possible. Brooker and Stone (2004) defined different design strategies for building adaptation by considering exemplary case studies of modern building conversions. They agreed that there are three ways in which buildings could be converted to serve new purposes: (1) The building could be put to intervention in which appropriate renovations are made, (2) insertion which involves addition of new elements and (3) installation. For this theoretical approach, the most important factor in building adaptation is the original building itself and how much of it could be retained/savaged.

## 3.3. Benefits of Adaptive Reuse

The main idea of adaptive reuse is the adjustments of an existing building to conform to a new use while keeping the heritage and values of the building. Building adaptation may require incorporation and presentation of new services, functions and make appropriate changes to preserve its historic value. The practice of adaptive reuse has proven to offer several advantages that benefit the community that opt for the practice. The major benefits from the practice are social, economic and environmental.

### 3.3.1. Social Benefits

The social benefits of adaptive reuse of historic/ancient buildings include the stimulation of the potentials of existing buildings and its environment and improving cultural values. Experts believe that adaptive reuse of existing/old building tends to create a connection between the past and the present which provides a great historic significance in the community. Hence, improving the state of existing building and putting them to new uses are more worthy and valuable than demolition. This furthers present variety of building types from different periods, cultures and techniques. Linters (2006) suggested that adaptive reuse of existing building is also beneficial in the reduction of abandoned and unused building. Hence having less hiding places which could be used for criminal actions- this indirectly improves social life in the community.

Existence of historic buildings is of great importance in the lives of the communities. They are as they seem to offer a means to link between the past and the presence. This buttress the intangible “existence” and livelihood of the communities. Historic buildings provide a social figure, reputation, pride and sustainability to the community and they create means of keeping important memories. When highlighting social benefits of keeping historic buildings and subjecting them to new uses, only the communities have long-term benefits from their values. Adaptive reuse of historic building is a sensitive programme and when performed efficiently, it can restore, reassure and maintain the historic significance and improve the life of the ancient building. In summary, the social benefits of adaptive reuse tend to offer include (a) historic and social recognition of the community; (b) unique landscape of the blend of ancient and modern architectural patterns; (c) restoration and maintenance of heritage significance of the building and the community and (d) a tourism attraction thus, generates economic benefits to the owner/community (Ball, 2002). This fact was buttressed by the study carried out by Keith

(2006) pointing out that heritage tourism yields high socio-economic benefit generated from conservation of historic buildings. It was recorded that about 38% more revenue could be generated on cultural tourism than traditional. More comparatively, cultural tourists stay longer at historic destinations than traditional tourists thereby, generating more income for the community.

### 3.3.2. Environmental Benefits

Linters (2006) further explained environmental benefits resulting from adaptive reuse of existing buildings since the process consists of salvaging and reusing existing structures and materials which reduces waste generation. It is important to point out that adaptive reuse is majorly based on the following expectations:

- That existing buildings have high potentials for adaptation
- They have longer lifetime after adaptation and
- The process would conserve the natural environment and generate least waste compared to demolition and reconstruction.

Sanya (2007) explained that by putting a building to adaptive reuse, many construction processes are bypassed and the project is not mostly harmful to the environment compared to a new construction. By consumption, Pacheco-Torgal and Jalali (2012) estimated that for a new building construction project, 40 percent of annual raw materials and energy is required. They also believed that the process requires up to 25% of timber harvest and about 16% of water supply. Their estimation on the production of carbon dioxide was up to a staggering amount of 45% resulting from the manufacture of construction materials, which account for about half of global greenhouse gas emissions.

Generally, keeping, sustaining and reusing existing building and building fabrics offers several environmental benefits. Some of these are reduced generation of wastes resulting from demolition; the retention of embodied energy of the original building and reduction in consumption of raw materials and resources. The major concern of experts about construction of new buildings is the sustainability to the environment as new building projects. Manufacture of construction materials contribute to emission of greenhouse gases and the depletion of the ozone layer (Pacheco-Torgal and Jalali, 2012).

### 3.3.3. Economic Benefits

The economic benefits of adaptive reuse are mostly for both the developer and community. Benefit for the developer involves low-taxed actions. The community benefit from the developed building without the need for introduction of facilities as in case of demolition and rebuilding. Dubois (1998: pp.121-127) suggested that adaptive reuse may be economically attractive to the community based on a number of conditions. He explains that if the building is not used for its existing functions, owner/government may change its functions and reuse the building which can lead to financial improvement in the community. He also explains that adaptive reuse projects and processes have lower cost implications in comparison to construction of new buildings. Thus, this could be beneficial to developers by reducing the costs and making use of materials in existing buildings.

Narrating the economic point of view, Berge (2009) argued that for construction of new project to be profitable, industries involved in the manufacturing of construction materials must locate their plants and production units close the market and the raw materials. They must use locally available renewable resources and provide facilities to cater for the production and reduction of released pollution to the environment. He explains that all this logistics have impact on the final price of the construction materials thus, leading to high cost of building construction. In this regard, adaptive reuse of existing buildings has sufficient economic benefits and costs concerns which will in turn, have a final impact on the owner, the inhabitants and the community at large. The following are some of the economic benefits which adaptive reuse of historic building can offer (Berge, 2009):

- Provision of community brand image and landmarks;
- Extension of the useful life of existing buildings and the costs to put up a new building could be directed to other economic concerns;
- Retainment of social and cultural identity and image of the ancient city (Rome, Cairo, Sydney, etc.); and
- Provision of important tourism attractions and draw cards in ancient cities and regional areas which will attract people, tourists and investment.

From the foregoing, it is that a good building adaptation programme is one that takes into consideration, the conditions and status of the existing building. Its historic values, in addition to the introduction of new features and function would bring changes to improve the current

state of the existing building. These are explained by the theoretical approaches adopted in adaptive reuse. Yet another good attribute of building adaptation programme is preservation of the historical values and sustainability of the process of the environment. Social and environmental benefits are more noticeable when practising adaptive reuse of historic buildings. Because the presence of ancient structures offers a unique landscape and identity to the community. Other another hand, economic benefits could be hindered because of the costs of maintenance, rehabilitation, inability of the building to carry out new functions and a long run waste on the adaptive reuse process. This is further explained as a criterion for the practice of adaptive reuse of historic building as fitness to perform new functions is of utmost importance. As stated above, the benefits of adaptive reuse of historic building could be social/cultural, economic and/or environmental. But the practice has some disadvantages. These disadvantages are usually connected with the durability of the building as they are believed to have depreciated/declined in structural stability. Another common disadvantage is the frequency of maintenance, but as Pacheco-Torgal and Jalali (2012) explains, in as much as the building may require periodic, frequent and adequate maintenance programmes, the cost of maintenance is not always as high as many presume.

### 3.4. Procedures for Adaptive Reuse of Buildings

General practice involved in adaptive reuse of buildings blends well with the relationship between the history of the building and the community to which it belongs. The most important concern on reusing existing building for new purposes is the relevance of the history which they belong. Thus, careful observations are made during adaptation in order to evaluate which part of the building is incompatible for the purported new use and addition of new building fabrics without distorting existing structural elements that are of much historical value (Latham, 2000).

The process of improving an existing building to adaptive reuse is somewhat similar to that of conservation/regeneration and rehabilitation programmes of the site. The practice provides an opportunity to preserve heritage/historic fabrics and make them available to new generations. Putting existing old buildings into new uses (mostly different from the purpose for which they were previously built for) is a delicate practice. It requires procedures to ensure that the buildings do not fail under adaptation. The following are some procedures which can be followed to ensure that appropriate requirements are met before placing an existing building to adaptation (Douglas, 2002):

The first and basic step has to do with the documents available on the existing building. These would give rudiment information on the structural elements, their status and present conditions. Building plans, structural drawings, mechanical and electrical drawings prove to be very useful at the planning and adaptation stages (Douglas, 2002; Rover, 2004).

Following the planning stage is the analysis of the current state/status of the building in order to have a cogent evaluation on which historic elements to be preserved to suit new uses the building is about to be put. This step needs to be accurate enough because removal of necessary historical and typological elements could render the whole process of adaptation futile. To buttress the importance of this step, documents acquired would guide the developer to current status of fabrics and structural element of the building which in turn attributes appropriate value to different historic parts of the building. During adaptation, demolition of some part of the building is almost not negligible. Thus, this step gives vital information as to which parts could be savaged, those that need intervention and parts (if at all) which should be demolished (Shemirani et. al., 2008).

The third step deals with the restoration and renovation programme to rejuvenate the existing building. In order to fully preserve the historic value(s) of a building, it is important to evaluate and distinguish which parts of the building are of historical relevance from those that are not. The goal of this step, while carrying out the restoration process and preserving historical values, is to erase incompatible parts of the building.

Lastly, the fourth step in building adaptation procedures involves definition of new compatible functions of a building. This is done by evaluating the opportunities, potentials and possible constraints resulting from the improved conditions of the abandoned facility. The new functions of the building are highlighted based on the strength of the structural elements and intrinsic qualities such as temperature, ventilation, natural light, exposure, flexibility and suitability to be subsequently modified, architectural quality and historic connection with the community (Loures & Panagopolos, 2007).

## 3.5. Criteria for Building Adaptation

Following the definitions of adaptive reuse of old buildings, some experts (Henehan, Woodson and Culbert, 2004) revealed the procedural criteria that are involved in the practice of building adaptation as follow;

- Condition of the existing building (physical, technical and structural) must be examined so as to be able to adequately carry out the functions for which it is required for the new design. Appropriate structural analysis of the new function(s) which the existing building is to be adapted to is required. As existence of historic buildings in a community provides amenities and social figure for such community. It is important to carry out adequate analyses on the performance of the existing building as inability to do so could lead to unnecessary cost concerns. Inability of the existing building to perform new tasks and cost of overall and subsequent maintenance may be higher that what is required to put up a new building (Kincaid, 2000).
- The adaptation process must offer an opportunity for the existing building to improve its life expectancy while serving the new purpose(s). It becomes less economically viable when the reused building only can remain significant and structurally supportive for a couple of years. Before selection, it is important to ascertain that the adaptation process would extend a buildings' useful life in terms of cultural significance, economic returns and structural life expectancy while in use (Fournier and Zimnicki, 2004).
- The existing building must respond well to the new use, to the surroundings and create an enhanced performance. The adaptation process must be sustainable to the environment on comparison in its new construction project and in terms of waste generation and release of pollution to the environment (Snyder, 2005).
- The existing building must have an important potential to create visual delight and coherence to users and viewers. In the long run, this may serve as sociocultural and economic benefits to the owner and the community. While historic building construction techniques appear obsolete, the buildings offer a unique appearance to the landscape of the community and before selection, it is important to appreciate this uniqueness (Zuchi, 2005).
- A major criterion is the sustainability of the environment. Thus, the process must be sustainable, energy and cost efficient and have negligible environmental impact in terms of pollution and waste generation (Langston, 2010).

## 3.6. World Organisations for Conservation of Historical Buildings

As has been established in earlier section of the thesis that historic building are delicate structures (due to their age and elements) and to prolong their useful life rather than abandoning them. It is important to have enough understanding of the elements of the building and how to

go about their maintenance, restoration and renovation. To achieve these, conservation of these elements and structures are thus, paramount. As would be seen in next section, there are tangible benefits of adaptive reuse of historic buildings, monuments and structures which are classed into – social, economic and environmental benefits. Having understood these benefits, there are some organisations– private or public that have been set up to take the responsibilities of understanding the system of historic buildings, enlightening the public of the benefits therein and proposing appropriate methods of conserving historic elements that make historic buildings.

### 3.6.1. The Institute of Historic Building Conservation (IHBC)

The Institute of Historic Building Conservation is a professional organisation that is strategically set up to specialise in historic environment conservation in the UK. Members of the IHBC work to secure and improve conservation of historic buildings and places of historic values. The purpose of this body is basically to promote excellence in historic and heritage building conservation and teach traditional building skills and techniques which can be used in maintenance and renovation/restoration of historic buildings. The IHBC believe in the idea that during repair of historic building, intervention should be as minimal as possible and the techniques and materials used must be very compatible. They create records and carry out analyses of the historic buildings before and after intervention.

They are involved in the following areas which overlap and are inter-dependent by integrating and creating an effective strategy in sustainability and conservation of historic environment.

- Evaluation: this area involves investigation into and research on historic/archaeological buildings, sites, landscapes and areas
- Management: this area encompasses the management processes during the conservation programme such as conservation planning system
- Intervention: including the procedure for conservation and enhancement of the building which may involve building restoration and area regeneration.

### 3.6.2. The Architectural Heritage Fund (AHF)

The Architectural Heritage Fund, founded in 1976 as a registered charity organisation to support and sponsor conservation of historic buildings within the United Kingdom. The body achieve this by providing information, advice and financial support to charity and non-profit-making organisations for projects involving adaptive reuse of old buildings. They develop

grants; adequate low-interest loan and play a handy development role in the provision of pertinent guidance throughout the conservation project.

During the last fifteen years, the body have impacted on conservation of about 293 historic buildings across the United Kingdom which have incurred a total expenditure of about £3.7 million from grants, over £46 million of loans and astounding £402 million additional investments levered in to the completion of the projects by AHF. In 2016, the body supported over 140 conservation projects.

### 3.6.3. The Historic Houses Association (HHA)

The HHA was founded in 1973 and as at 2013, it represents about 1500 historic houses that are owned by private individuals. These activities of the association involve active businesses, wedding events centres, corporate and private events centres, festivals concerts and conferences. Each year, they record about 14 million visits from these events and programmes. Areas of interest of the association include concerned about the future of the houses within their care, conservation of the heritage they hold and the business they run in terms of the events they host. They also provide technical supports, networks, seminar and information on health, security, tax, safety, marketing and education to the owner of the houses within their care. Part of the opportunities for member houses is that the association promotes visitation activities, events and discovery for other business activities.

### 3.6.4. International Council on Monuments and Sites (ICOMOS)

ICOMOS is a non-government organisation found in 1965 and they are concerned about conservation of historic monuments around the world. Presently, 44 countries in Europe are registered members and the group create bilateral and multilateral relationship with other countries around the world. The goals of the organisation involve activities to strengthen the relationship between European member countries and other countries in which they engage in bilateral/multilateral relationship with for the purpose of historic structures conservation. They also create awareness of the effect of climate change on the status and stability of heritage buildings and overall effect on the economic value.

### 3.6.5. The National Register of Historic Places – USA

The National Register of Historic Places is another body involved in the conservation of historic buildings, places and site within the United States of America. The body was founded and fully authorized in 1966 and their early projects were restoration of national parks. The National Register of Historic Places is one of national programmes by the Park Service to organise and support public and private efforts to evaluate, identify and protect historic and archaeological resources within America. The body reviews nominations of identified parks and places submitted by states and other federal agencies to the National Register. They also offer guidance on documentation and evaluation of different historic places and park within the country by the help of qualified professionals while suggesting conservation benefits and incentives possible on historic properties in the USA.

### 3.6.6. The Burra Charter – Australia ICOMOS

The Burra Charter was first adopted in 1979 at the historic South Australian mining town of Burra. Minor revisions were made in 1981 and 1988, with more substantial changes in 1999. Following a review this version was adopted by Australia ICOMOS in October 2013. The review process included replacement of the 1988 Guidelines to the Burra Charter with Practice Notes which are available at: australia.icomos.org Australia ICOMOS documents are periodically reviewed and we welcome any comments. The Charter sets a standard of practice for those who provide advice, make decisions about, or undertake works to places of cultural significance, including owners, managers and custodians. The Charter can be applied to all types of places of cultural significance including natural, Indigenous and historic places with cultural values. The standards of other organisations may also be relevant. These include the Australian Natural Heritage Charter, Ask First: a guide to respecting Indigenous heritage places and values and Significance 2.0: a guide to assessing the significance of collections. National and international charters and other doctrine may be relevant. See australia.icomos.org. The Burra Charter advocates a cautious approach to change: do as much as necessary to care for the place and to make it useable, but otherwise change it as little as possible so that its cultural significance is retained (Australia ICOMOS, 2013).

The essence of setting up or adopting a historic conservation body is to protect the elements of historic buildings, manage their stability and keep them in use. All listed conservation bodies have been prominent in their peculiarity and useful for their purpose. While all the organizations have proven to be useful, *Institute of Historic Building Conservation* (IHBC) could be adopted by Nigeria for the following reasons:

- It is a British organization which implies that there will not be confliction of idea as Nigeria was colonized by Britain. It may also ease their programmes and operation.
- The organization also teach traditional techniques for maintenance, management, evaluation and intervention – which is peculiar to *IHBC.*

## 3.7. Prominent Adaptive Reuse of Historic Buildings around the World

Several examples are considered below in order to show how adaptive reuse is handled in various nations.

### 3.7.1. Küppersmühle Museum, Duisburg, Germany (Project realization 1997-1999)

Küppersmühle is an imposing brick building erected by Joseph Weiss and the Kiefer Brothers between 1908 and 1916. It is the most important historical structure in the inner harbour and is being remodeled after a master plan by the English architect, Norman Foster. Today the Küppersmühle houses a museum with an exhibition area of 4,850$m^2$, restaurant. 920$m^2$ and service areas of 5,480sqm. The museum contains part of Hans Grothe's collection: German postwar art, in particular the work of Polke, Baselitz, Lüpertz, Penck, Richter, Darboven, Kiefer, Horn, Trockel, Immendorff and Rückriem, (Fig. 3.1).

The conversion of the industrial building into a museum for the Grothe Collection was done similar to the Tate Modern project in London. It has been also accommodated in this imposing brickwork building, a former power plant. In contrast to the Tate, where only the shell of the building was preserved, most of the load-bearing structure of the Küppersmühle could be incorporated in its renovations. The height of the exhibition spaces (5-6m) necessitated taking out some of the ceilings. Existing windows in the area of the exhibition spaces were walled up with bricks of the same quality as the original brickwork. This heightens the monolithic effect of the building even more. Daylight for the exhibition spaces come through full-height slits in the brickwork. It has narrow openings which provide an enclosed and concentrated space. In addition, the openings afford a view outdoors and add the animating effect of daylight to the omnipresent artificial illumination. A new stairwell tower complements the overall composition of protruding and recessed building components. It is somewhat like a separate building with a spatial quality of its own that comfortably links the three floors of exhibition space. The proportions of the treads were designed to make the use of the stairs somewhat slower than usual.


**Figure 3.1.** Küppersmühle Museum, Duisburg, Germany

Source: https://aedesign.wordpress.com/2009/08/31/kuppersmuhle-museum-duisburg-germany/

### 3.7.2. The Soyoo Joyful Growth Centre, China (2000)

The round building was originally built around the year 2000 for financial district in Zhengzhou by the government. It has since been unoccupied (Fig. 3.2). There are three derelict round buildings in the area that were referred to as ghost buildings. The need for improved education facilities inspired the architecture firm- Crossboundaries to convert one of the ghost buildings into a kindergarten playground now known as the Soyoo Joyful Growth Center.

Crossboundaries adopted the educational concept to restore the abandoned buildings to provide comprehensive quality education and a place of learning for children. Crossboundaries designed a set of combinations for Soyoo around this role-playing entertainment Inter-school teaching program. Every day, children explore their own interests and their desire to learn and grow into whatever they want to be at the end of the day.

In the emerging wave of learning and entertainment, Soyoo is a well-researched and developed restoration programme that offers children both education and entertainment utilizing the spatial dimension of the interior to transform the abandoned ghost buildings into a place of learning for children.

**Figure 3.2.** The Soyoo Joyful Growth Center, China

Source: https://www.archdaily.com/784619/soyoo-joyful-growth-center-crossboundaries

### 3.7.3. Willis-Knighton Health System Adaptive Reuse, Louisiana, USA (1970)

Willis-Knighton Health System is based in Shreveport, Louisiana. It now occupies the former Doctors' Hospital of Shreveport (built around 1970) which is a 150,000ft$^2$ building that has been abandoned since 2010. The building, now known as the WK Rehabilitation Institute was reintroduced in 2017 while featuring and sustaining the entire facades with new interior elements an improved layout now eases accessibility. At the end of the renovation, the cost of operation (acquisition inclusive) was $26 million. A present evaluation price of the new building now totals with about 50% increase to $44.5 million (Fig. 3.3).


**Figure 3.3.** The WK Rehabilitation Institute, USA

### 3.7.4. The La Linda Bakery, Montevideo, Uruguay

The La Linda Bakery now occupies a home facility that was constructed around 1927. It was a heritage building which inspired architect Pedro Livni to reconfigure this home facility into a café and bakery (Fig 3.4).

La Linda is an artisanal cafe and bakery built within a 1927 garden house in the country's capital Montevideo. The bakery spaces required did not fit into the original home, so the architect chose to build an extension at the back for these areas. The new bakery is a longitudinal volume that intersects the heritage-listed home. At the point where the structures meet, two angled columns provide additional support, creating an A-shaped outline. Such a large structural support allowed the architect to make the bakery's walls out of glass, so that customers in the courtyard could observe the food production inside. This space has an industrial character and is lit by a grid of simple neon tube lights. This contrasts the old house nearby, which was preserved as much as possible.

**Figure 3.4.** La Linda Café and Bakery, Uruguay

Source: https://www.dezeen.com/2018/04/13/heritage-building-uruguay-houses-la-linda-bakery-cafe-pedro-livni-arquitecto/

### 3.8. Adaptive Reuse in Africa

Africa, being the structure of humanity, possesses a wealth of heritage structures and buildings ranging from Palaeolithic sites to culturally historic towns, cultural landscapes, monuments and buildings. Some of the heritage buildings are the ruins of Great Zimbabwe, the mosques of Timbuktu, the Osun Osogbo Sacred Grove (Nigeria), the Swahili towns of Zanzibar and the Island of Gorée. These buildings present Africa's specific identity, creativity, diversity and ingenuity and also importance as part of the world's outstanding cultural heritage. Yet too many of these important cultural properties remain unknown, unrecognised and too often poorly maintained and are therefore threaten.

#### 3.8.1. Shandukani Hillbrow Health Precinct, South Africa

The building, built in 1927, was adapted in terms of the maxim of doing as much as necessary and as little as possible to the building. The building had been abandoned for many years and had become severely deteriorated and waterlogged warranting the need of an intervention to create an extensive adaptive reuse project as well as addition of new services required by modern medicine (new use). The space of the building was not enough to accommodate new facility thus, there was need to add a third floor over a conveniently located flat roofed area on the north side of the building (Fig. 3.5).

**Figure 3.5.** Shankudani Health Centre, South Africa

http://www.theheritageportal.co.za/article/adaptive-reuse-shandukani-hillbrow-health-precinct

### 3.8.2. Mikindani Old BOMA Building, Tanzania - 2005

Mikindani is a fascinating old town in Southern part of Tanzania with winding streets. It has an interesting blend of thatched mud houses and coral stones influenced by foreign architecture constructed around 1964 (Fig. 3.6). Mikindani was an important trading centre as far back as the 15th century and the famous explorer David Livingstone quoted it in his diaries as being "the finest port on the coast". Since then its fortunes have fluctuated but it still reflects its multicultural Arabic, African and European history.

The Antiquities Act of Tanzania enacted by the independent government in 1964 and amended in 1979 to replace the colonial Monuments Preservation Ordinance and the Monuments Ordinance promulgated in 1937, is the basic legislation for the protection and preservation of the country cultural heritage resources. Under the law, the following categories of cultural property are recognized and protected: relics, monuments and protected object, (Amambay: 2005).

**Figure 3.6.** Mikindani BOMA, Tanzania

Source: http://eastafricanretreats.com/portfolio-item/the-old-boma/

From the examples above, adoption of the practice to keep, sustain and reuse of existing buildings and building fabrics offers several environmental, economic and sociocultural benefits. Some of these are reduced generation of wastes resulting from demolition; the retention of embodied energy of the original building and reduction in consumption of raw

materials and resources. The practise has also proven to be conservational in all dimension: it conserves the past and present a link to the present by keeping the fascinating rigor of old buildings. The practise also helps in mitigating the increasing demands for construction materials – especially production of cement which accounts for about 7% $CO_2$ gas emission to the environment.

## 3.9. Conservation of Historical Building and Adaptation in Nigeria

Earlier section (*see section 2.5*) of the research highlighted some of the prominent historical (though traditional/vernacular) structures in Nigeria. Despite the numbers of similar buildings in the country, only a few are placed under good maintenance programme as there is no particular body responsible for the conservation of historical buildings and monuments in the country. As a matter of fact, only recently have there been researches suggesting conservation and adaptive reuse of these heritage buildings.

Akinkunmi (2012), explained the sustainability favours in the preservation of existing building. He exerted that Improving the conditions of existing buildings will lead to maximization of usage which is the cheapest and lowest-impact solution to the provision of housing presently at rural communities in Nigeria.

Kolo (2015) also highlighted the potentials of colonial buildings in Nigeria and Cyprus and suggested possible adaptive reuse as opposed to abandoning them to deteriorate and cause environmental degradation.

# CHAPTER 4

## DISCUSSION, EVALUATION AND ADAPTIVE REUSE POTENTIALS OF THE TWO CASE STUDIES

Throughout the earlier section of the thesis, literatures have been cited to establish that in order to maintain the historic characteristics and values of historic buildings in adaptive reuse. It is important to make a coherent match between historic elements of the old building and its contemporary elements. During the process of analysis, the interior features of two palaces were explored. Steps were taken in attempt of harmonising historic elements with appropriate contemporary elements. It is important to note that adaptation of historic building warrants preservation of some historic elements in the buildings. Thus, the new design need be sensitive enough for these historic features. The process must enhance and compliment the historic characteristics of the members intended to be preserved. Although, preservation of historic features is important, exposed structural members such as timber, columns and brickworks must be rehabilitated, preserved and protected so as to be able to efficiently carry out new functions. This section of the thesis deals with the insertion and intervention processes that could be carried out on two Nigerian historic palaces while conserving the historic value and features of the buildings.

The concepts of building adaptation are rapidly improving across the globe. But there had yet been no records of adaptive reuse of existing buildings in Nigeria. This could be traced to lack of appropriate record keeping, which gives important information about the building to be put to adaptation. Generally, private properties are either abandoned or put to restoration while maintaining the same purpose for which it was built. On the other hand, government properties are now witnessing adaptation as how governments see the need to make use of their abandoned structures and monument to cater for other uses rather than constructing new structures. There have been records of some private facilities that have been put to adaptation but the full potentials of the buildings were not exploited. There is only little information about existing buildings.

## 4.1. Adaptation Methodology

Basically, the palaces under study have been abandoned and had no utilization at the time of our investigation. Hence, the purpose of the exploration is to enlighten the potentials of the abandoned palaces to be put to new use and show benefits the processes of adaptive reuse can offer.

Three main theoretical approaches toward adaptive reuse of historic building are adopted for the purpose of this study;

- Typological approach (Cantacizino, 1975) involves the organisation of the case studies according to their construction type before they could be converted to new uses
- Technical approach (Highfield, 1987 and 2000) views building adaptation from how much the palaces will allow new function(s) to be imposed on them
- Strategic approach (Machado, 1976) considers historical significance of materials of the case studies.

However, the study proposes that in order to achieve complete building adaptation, while conserving the significant historic elements and value of the case studies (the abandoned palaces), it is sufficient to combine the three approaches, rather than making an independent application of any of the aforementioned approaches/techniques.

Before initiating the intervention process, it is important to understand how the buildings of this study would behave under different climatic conditions, having understood that age of the buildings which play a great role. These physical factors are (temperature, water, wind, and vibration) were concluded, after an investigation was carried out and during the interview with one of the heirs of the owners of the palace - Magaji[14] Obadoke. Effects of each of these physical factors were studied and appropriate measures to restore the building were suggested;

The action of temperature depends on the frequency and range of variations in heat which may affect the thermal conductivity and porosity of members of the building – timber and brickworks inclusive (Kramer, 2010). This implies that damages done to the buildings (case

[14] *Magaji is the title given to the eldest son of the family in Yorubaland. The Magaji is in charge of the affairs of the family and maintains the properties. For the research, the Magaji of the two royal families were interviewed: for Aare Latoosa Palace, it was disclosed that the king was a warrior hence, the interviewer was restricted from visiting some parts of the palace that were tagged "sacred".*

studies) which may be as a result of frost action leading to weakening and crumbling of members could occur due to heat change (freezing and thawing).

When talking of water, the major factor that comes to mind is rain. Moist winds, percolation, condensation and adsorption all contribute to how bricks become humid and react to humidity in the environment. The effect of water on buildings was explained by Claytor and Schuele (1996) which was applied during the investigation of both case studies. They explained that when a building is exposed to humidity, either from rain or damp environment, there is water movement (known as capillary absorption) in the elements of the building and the phenomenon can weaken structural members (Claytor and Schuele, 1996).

Although Nigeria does not witness any form of wind disaster, Kijewski-Correa and Kareem (2008) have explained that the effect of wind can cause damages to wooden frames of roofing system as a result of large pressure fluctuation around the perimeter of the roof.

Therefore, the following procedures were proposed to help fabricate using an adaptation project that suits the present condition(s) of the case studies. These would effectively perform new functions imposed on them while conserving the historic values;

1st Step A careful thematic comparison, analysis and documentation of present conditions and situations of the case studies were made by investigating the effect of some physical factors on the case studies (temperature, water, wind). Each case study was studied at a time, under the effect of every physical factor considered. Suggested interventions were made accordingly.

2nd Step Accepting and presenting some specific elements of the buildings were made in order to explore the original integrity of the buildings. Interventions were suggested in order to carry out rehabilitation and restoration on the affected element(s) of the buildings as to ensure the case studies fits for building adaptation.

3rd Step Some specific architectural features of the buildings are exploited in order to clarify and emphasise the hidden depths, heritage attributes and values of the building.

4th Step The potentials of the case studies were established. This aids in the selection of more structurally stable of the two case studies. Thus, new functional use was proposed and further investigations were made. These were, case study evaluation, and examination of material and finishes for the proposed new use.

## 4.2. Present Condition of Case Studies

This investigation explores the effect of climatic and physical factors such as temperature, rain, wind, vibration on the case studies, taking a case study at a time, under each physical factor. This method was adopted so as to create a visual image of the case studies and their present conditions.

As explained by Kramer (2010), Claytor and Schuele (1996) and Kijewski-Correa and Kareem (2008), some climatic conditions can affect the structural stability of historic buildings and the age of their elements could aggravate the level of effect these climatic factors can cause. The effect of the aforementioned factors was examined and applied to suggest appropriate rehabilitation project in order to make the palaces fit for new use.

### 4.2.1. Aare Latosa Palace

#### Effects of Temperature

As suggested by Kramer, there must be adequate means by which heat if removed from within a building in order to prevent deterioration. Timbers become weak and cement plasters crumble and fall off brickworks. This is a result of surface temperature of the interior leading to risk of condensation of the interior walls and surface temperature of the exterior leading to risk of damages of the sandstone veneer from freeze-thaw effect. The plastering element of the structure had crumbled leaving just a few which is evidence that the heat trapped within the building have not been adequately released out of the building due to small size of windows.

**Figure 4.1.** Effect of heat on wall plastering, Aare Latoosa Palace

*Suggested Intervention*

Although a building must be able to maintain a range of room temperature, it is evident from the picture above that frost and freeze-thaw effects could question the interior quality of adaptive reuse processes. In order to maintain adequate room temperature within the building, there needs be a thorough in flow and outflow of ventilation. Thus, the window level should be lowered and their size increased in terms of width and breadth so as to give room for appropriate ventilation thereby, preserving the renovation processes and making it effective.

**Effects of Water**

Figure 4.2 below shows the present situation of the palace and the extent to which capillary absorption has affected the structural and roofing elements of the structure. As emphasized by Claytor and Schuele (1996), capillary absorption manifests by extending capillary movement of water several meters above damp soil level. This provoked structural and chemical damages to the building. In case of Aare Latosa palace, water movement from beneath (percolation) and from above (rainfall) have resulted in soaking of the building structural members hence, subjecting them to structural overload. Aside structural overload, water absorption has facilitated chemical decay of interior features. Moreover, the trusses are not protected from water thus, becoming rather weak to hold the load from the roofing system.

**Figure 4.2.** Deterioration of interior by water, Aare Latosa Palace

*Suggested Intervention*

In this case, a careful rehabilitation of the roofing system has to be carried out and the trusses replaced to withstand the weight of the roof – this will give rigid support to the building and also help to reduce the effect of rainfall on the building. Furthermore, to reduce percolation into the structural members from beneath the building, adequate drainage system must be created to remove water from around the building. Since water will always move from a higher elevation to lower elevation, drainage would serve as the only water to reduce percolation and penetration of water into structural members of the wall. This intervention process will result in retainment of chemical and biological interior of the building (the decorations and timbers) and also, reduction in capillary level of water within structural members.

**Effect of Wind**

From the explanation of the effect of wind by Kijewski-Correa and Kareem (2008), Aare Latoosa Palace seems to need more rehabilitation in order to prevent the effect of huge pressure fluctuation around the roof periphery. The members carrying the roof load are exposed to moisture variability (gain or loss) that could occur between the timber and the environment. It was found that the exposure of these members could be at the detriment of the stability of the roof and the wellbeing of the palace (Fig. 4.3).

**Figure 4.3.** Exposure of wooden frames for roofing system, Aare Latoosa Palace

*Suggested Intervention*

In as much as the horizontal wooden frames for the roofs shown in the figure 4.3 seem to be in good state, the vertical members and those which the roofing sheets are attached to, might require rehabilitation. It could be seen that abandoning the building has rendered it susceptible to fast deterioration. Thus, making appropriate renovation and subsequent maintenance practice would make the building fit for adaptive reuse.

### 4.2.2. Aleshinloye Palace

**Effects of Water**

As noticed in this case study, the only water effect was seen as a result of rainfall washing away decorations and paintings. Rain is often seasonal. This resulted from soaking of the timber members of the windows and water flow along mason structures. Even on contemporary buildings, capillary movement of water would lead to fading and washing away of both interior and exterior decorations. This could render the building less appealing. The effect of rainfall water of the historic building is proven in figure 4.4 below.

**Figure 4.4.** Washing away of the interior by entrance of rain water

*Suggested Intervention*

Although effect of water in this case study is minimal, new adaptive reuse project would warrant simple renovation of the interior and curbing of the entry of rain water into the building. As noticed and enlightened during the interview, the wooden members of the window seem the most vulnerable points of entry as they soak with rain water. To cater for this, the window

members could be coated with water repellent paints or changed to either aluminium or glass louvres material.

### 4.2.3. Intervention on Vibration

Vibrations can arise from road and rail traffic and movement of occupants have more effect on old buildings than new. The effects are a subject of concern in adaptive reuse of these ancient buildings (Rainer, 1982). In as much as vibration from road and rail traffic may affect a building and its contents, the movements and actions of the occupants play important role in vibration generation. In this regard, adaptive reuse in both case studies must take actions of the occupants into account. Although there was no report of vibration effect on either case study, when they are put to adaptive reuse and intensive use, movement and actions of occupants, doors/material movements and closeness to road and rail traffic have to be considered. This process will help in justifying the type of use the historic building could be put to. The physical factor applies to both palaces and needs to be considered during new adaptation project in order to sustain the stability of the building.

**Stairs**

Having stairs within a building is an ancient form of architectural design and this is evident in this case study. The condition of structural elements, historical value and suggested interventions are explained below.

(a) (b)

**Figure 4.5.** Wooden stairs within Aleshinloye palace

From figure 4.6(a), the stairs– which are made from timber are as old as 200years, (according to the correspondent). They are in good form. This feature in particular is a historic feature and its structural form and material point to the fact that it is part of the historic characteristics of the building that needed to be retained. Presence of stairs within building seems to be a form of interior decoration in ancient structures and they add to the view of total interior space.

Figure 4.6(b) shows that the stairs cover have dilapidated and already falling apart. This could be as a result of physical actions caused by climatic effects or biological actions caused by termites.

*Suggested Intervention*

Considering the time for which the building had been abandoned, there might be need for evaluation of this structural member. Its rigidity should be checked and appropriate renovative measures in order to increase the strength of structural member and making it fit for new use. According to the correspondent, the upper floor was solely for the king and the stair would not have practically been put to extreme vibration during use. For adaptive reuse to be effective, new use must be evaluated and the strength of the stairs must be enhanced (or maintained) to cater for a new use. Furthermore, since space is important in maintaining the spatial dimension of the interior, the door leading to the lower part of the stairs could be removed to cater for the spatial dimension needed in the interior.

In case of member shown in figure 4.6(b), restoration and redecoration could be carried out. Since the other part of the stairs shown in figure 4.6(b) does not have stair cover, redecoration could be done by removing the wooden cover below the stairs since this part has almost no historic value. The impact of this redecoration process is seen in the overall cost which has little or no impact on the outlook of the member. In the same vein, to carry out total restoration, the stairs must be returned to their initial conditions and another wooden cover must be provided. To carry out this process, the stair cover should be provided before securing the rigidity of the stairs as proposed above due to vibration effect.

**Ceilings and Trusses Cover**

As explained by Kijewski-Correa and Kareem (2008) on the effect of wind on the roofing system, there must be a rigid frame to support the roofing system so that it can withstand large fluctuation in wind pressure around the perimeter of the roof. Since construction, the wooden slates that serve as the ceilings have protected the stability of the roof and no record of dilapidation has been made.

**Figure 4.6**. Roofing frame protection of Aleshinloye Palace

It was suggested that external outlook of this member should not be trusted. The trusses and frames supporting the roofs must be inspected before subjecting the building to adaptive reuse. With historic value close to nothing, this member could be redecorated to modern standards which could add a spice of blend between vernacular and modern architecture to the building. As seen in the figure 4.7 above, windows provide space for abundant day lighting and ventilation. But the arc above the window could serve as a feature for natural lighting.

Although originally, it was noted that interior spaces of this palace were designed in a way which allowed natural daylight to penetrate deep into the centre of the building. But this amount of light occurred as a result of dilapidation of the arc cover thus acting more like skylights to provide light into the building. The retention of these arches is important in providing natural lighting to brighten the interior of the building which in turn would lead to little need for artificial lighting during daytime. To retain these features, a redecoration should be carried out and the arches covered with glass material to allow enough lighting into the building during the day.

**Window and Room Temperature**

As explained by Kramer (2010) on the importance of windows in heat moderation and regulation of room temperature, it is crucial to maintain and/or improve the status of windows in ancient buildings. For Aleshinloye Palace, the building already has large windows that provide space for abundant natural light and ventilation. It would require little architectural and structural works besides repair and/or replacement of deteriorated window frames and wooden panes as shown below. Aside heat and temperature regulation, the floor-to-ceiling position of

the windows offer a characteristic feature to provide majority of lighting of interior spaces (Fig. 4.7).

**Figure 4.7.** Window status and condition

*Suggested Intervention*

As stated above, windows play strategic roles; heat regulation, room temperature maintenance and presenting the effect of day lighting. Day lighting should be one of the major characteristic that should be considered during rehabilitation process and should either be enhanced or remain unchanged. This implies that during the hours of sunlight, there would be adequate amount of natural light that would be allowed into the spaces thereby providing enough illumination for the interior through windows.

**Doors and Entrance**

In addition to the window panes and covers, doors seem to have suffered deterioration to a great extent. Made from old hardwood (of about 200years old), the doors appear to be in bad shape and need adequate intervention. From figure 4.8 below, it could be seen that doors in the internal part of the building seem pretty much intact. But those exposed to extreme weather (heat and moisture from rainfall) have dilapidated to a great extent and, warrant replacement. Since doors make part of the outlook of a building, the process could be carried out such that the replacement process does not yield extreme vibration that could affect the stability of other old features within the palaces.

**Figure 4.8.** Doors and entrance

## 4.3. Architectural Description of Case Studies

As has been established in earlier section of the study, preservation of interior features and forms is crucial in retaining historic characteristics of buildings. By understanding original forms and features of a building helps in determining which forms are indispensable and need to be maintained during rehabilitation process. Also, this simple practice of understanding original forms of the building would help in juxtaposing and merging structural efficiency and value retainment of the interior elements. For these case studies – Aleshinloye and Aare Latosa Palaces, it was found that for adaptive reuse to be efficiently done, there need to be dimensional relationships of the overall forms and individual spaces of the large open interiors in order to suit new use.

### 4.3.1. The Aare Latoosa Palace

The palace was constructed around 1818 measuring approximately area 391.2m² (21.1m x 18.54m). The historical story-building has 9 main rooms including palace chamber, which are mostly for private use of the king. The surrounding domestic compound buildings housed several members of the royal family. The palace has been abandoned for about 197 years after the demise of the king whose reign was for about 58 years. During inspection and interview, the *Magaji* of the family, pointed to some of the original historic features of the palace; some of which are structurally intact while others have deteriorated resulting from lack of frequent maintenance and usage. There are major technical and structural type of distress that were detected was the washing off of interior design and non-structural defects.

**Figure 4.9.** Entrance of Aare Latoosa Palace


**Figure 4.10.** Location of Ibadan on Map of Nigeria

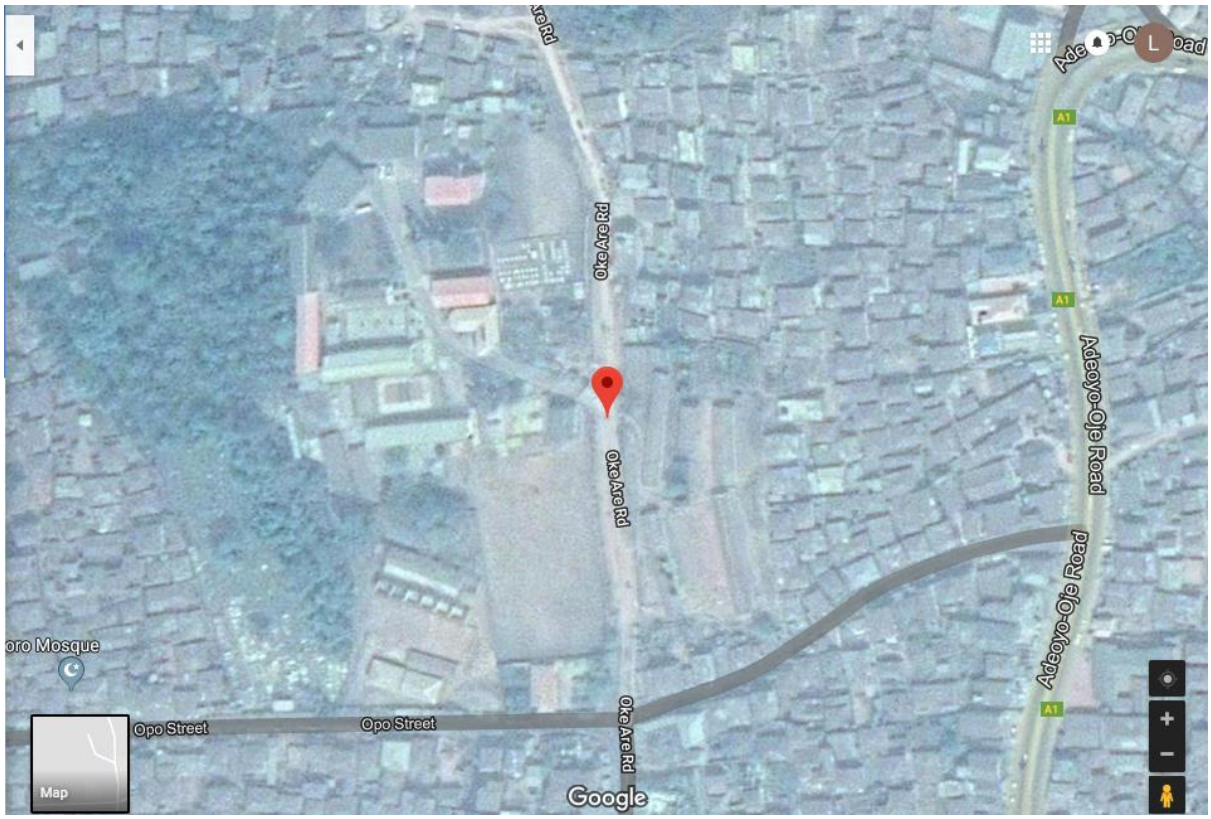
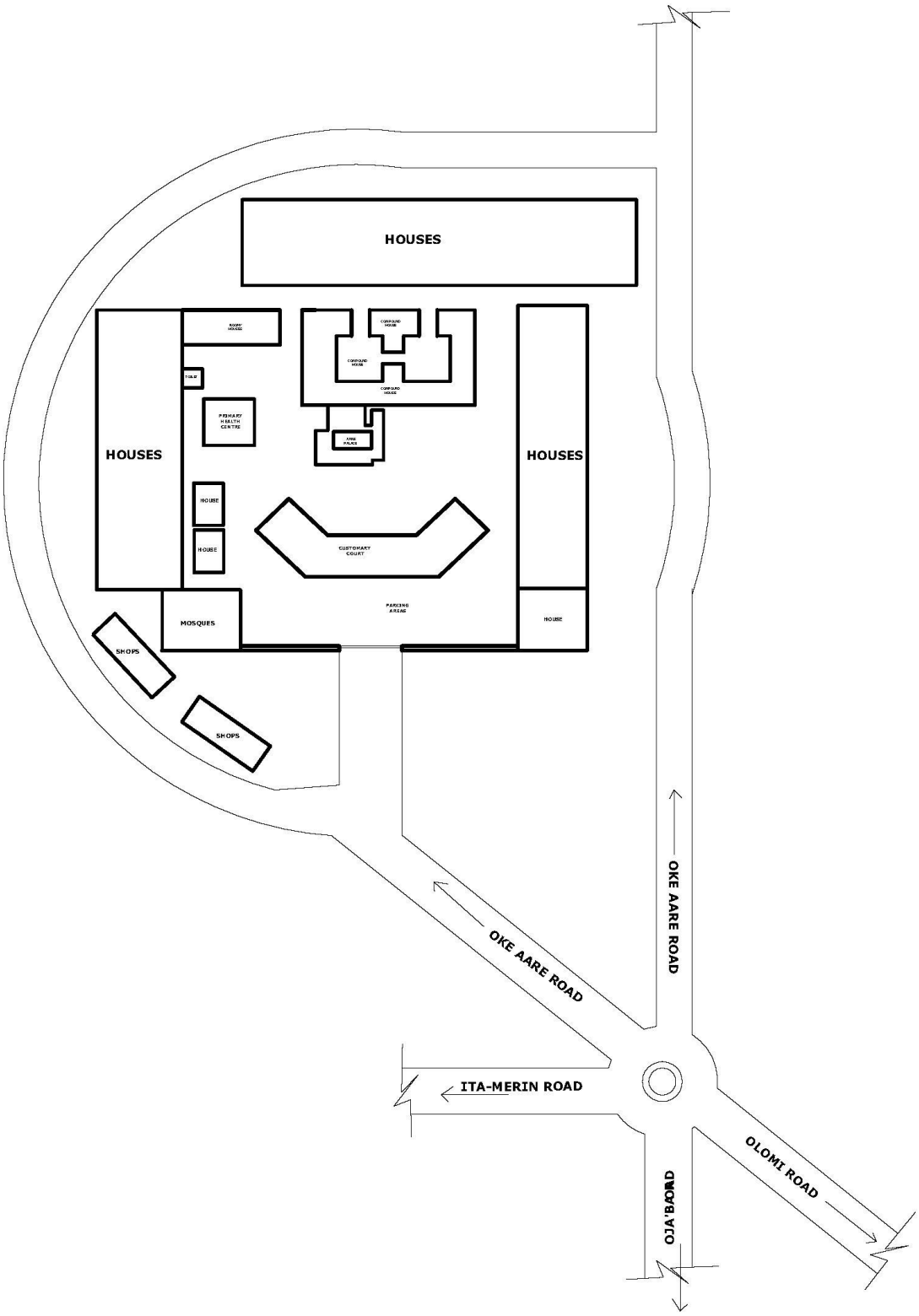
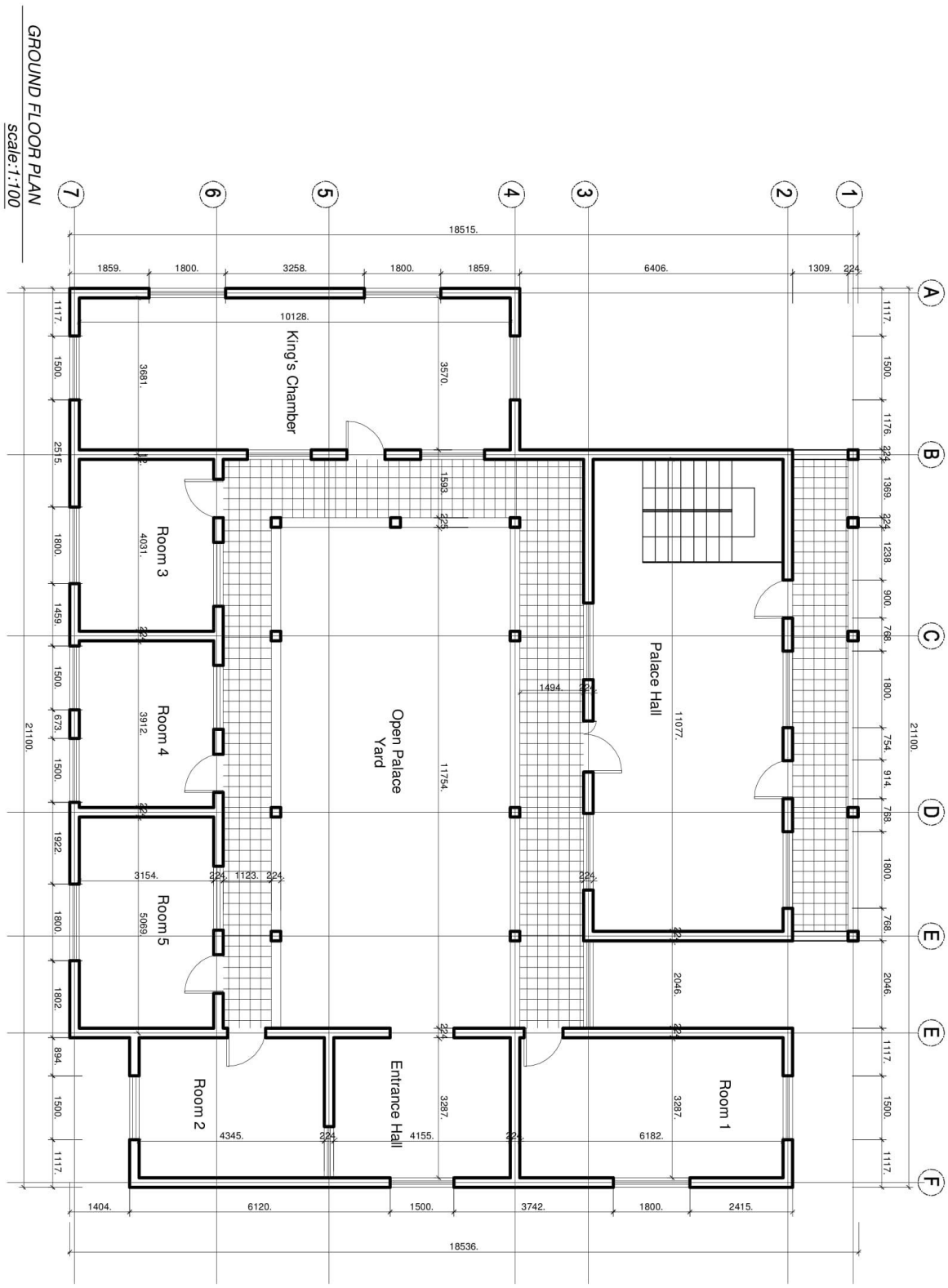



**Figure 4.11.** Location of Aare Latoosa Palace, Oke-Aare, Ibadan

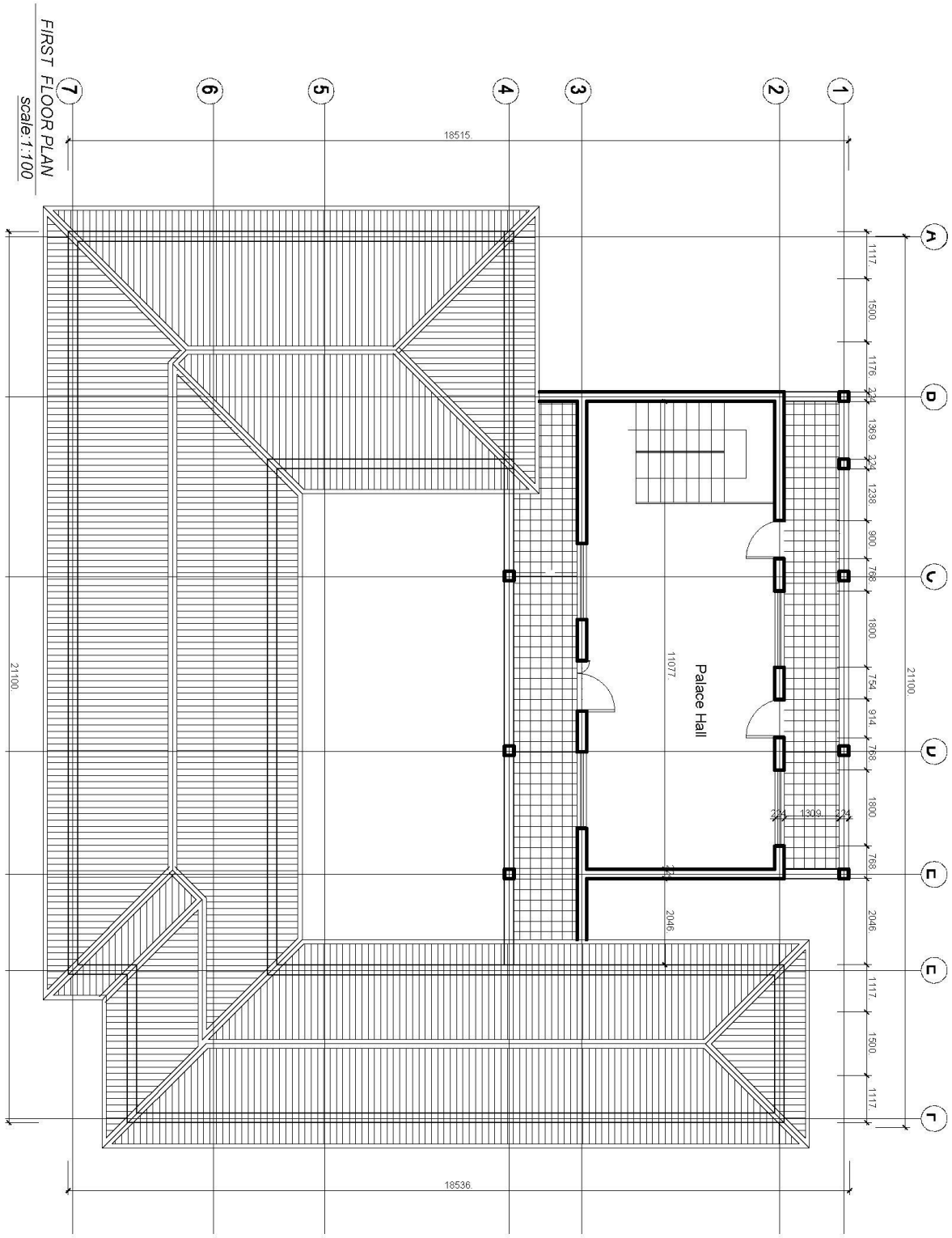



Scale: 1: 1500

**Figure 4.12.** Site Layout, Aare Latoosa Palace




GROUND FLOOR PLAN Scale: 1:100




FIRST FLOOR PLAN Scale: 1: 100 (mm)

**Figure 4.13.** Architectural drawings, Aare Latoosa Palace

Inspection revealed that the layout of the palace lacks proper drainage system which does not help the discharge of rain water to external channels. The implication of the absence of this facility has led to washing away of part of the foundation elements of the palace as shown in figure 4.6 below. The *Magaji* agreed that proper drainage system could have help to sustain the foundation members and protect them from exposure as seen below.

**Figure 4.14.** Structural Elements Washed Away by Erosion Water

**Figure 4.15.** Deteriorated Structural Elements

**Doors and Openings**

According to the inspection, no major rehabilitation was recorded, so openings and doors are still original. The tiny openings pattern belong to this type to architecture of the region andand it is a unique feature of this historical building. The external openings measure about 1.3m by 1.75m. While internal openings measure about 0.7m by 1.5m. The doors which are made of "special" timber wood. This kind of wood was said to almost no longer or rarely in existence.

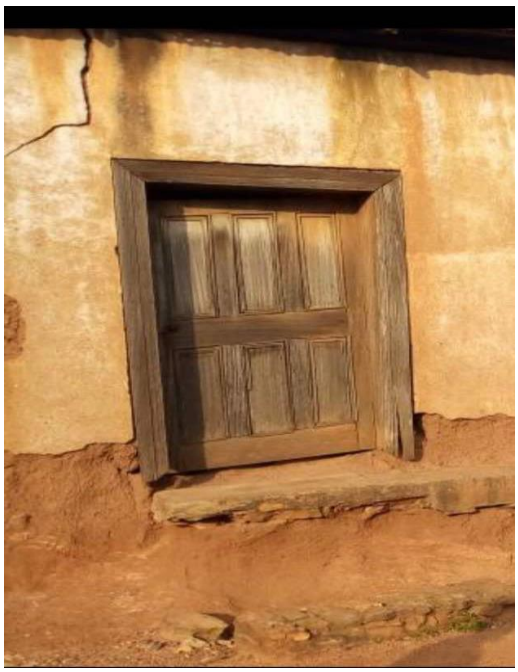


**Figure 4.16.** Deteriorated Door and Opening, Aare Latoosa Palace

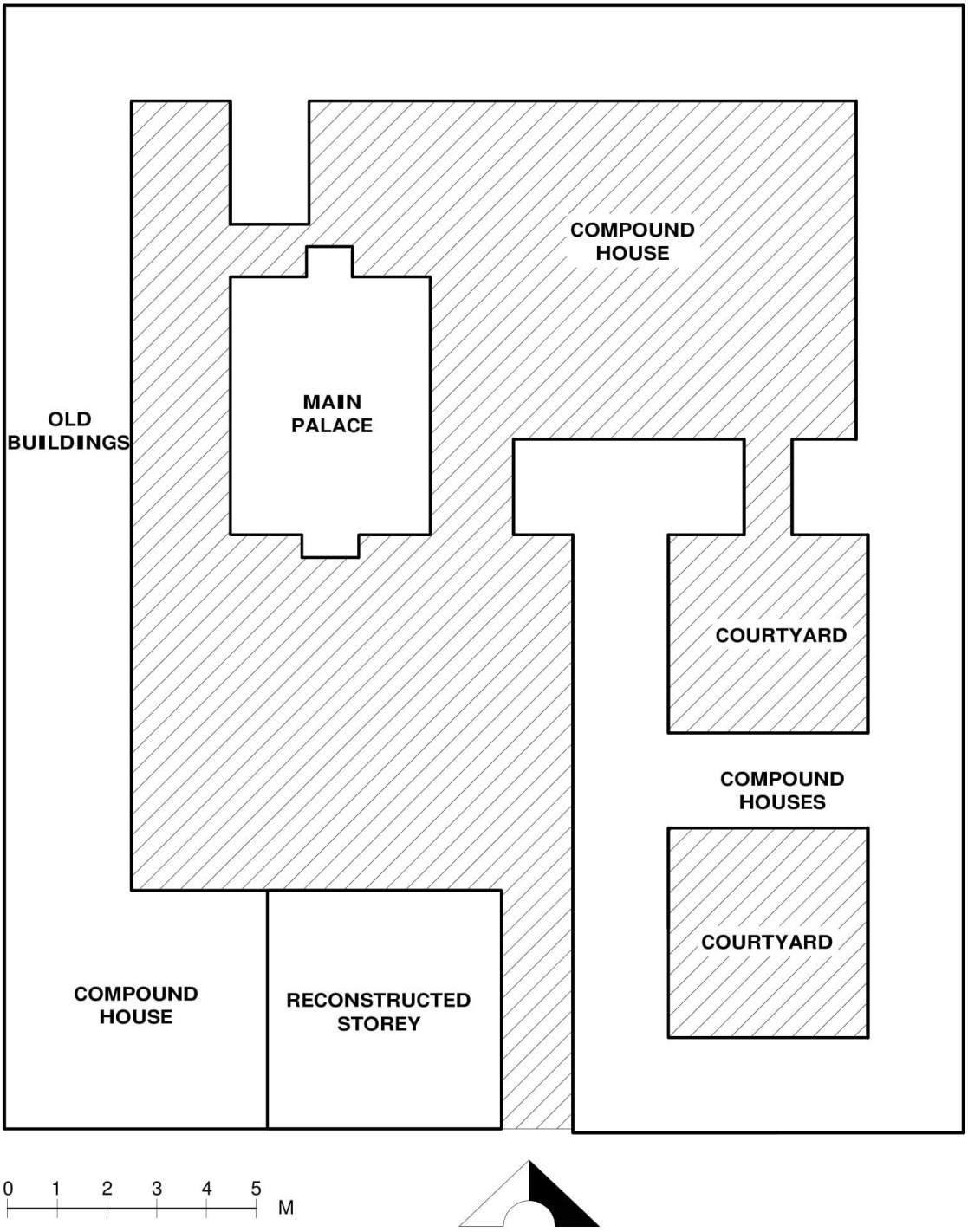
#### 4.3.2. The Aleshinloye Palace

The Aleshinloye Palace which was constructed around 1879 measures approximately 324.2m² (17.4m x 18.63m). It has been abandoned since 1946, after being used for about 67 years. The palace consists of the main palace hall and about 8 rooms for private use of the king. The palace is surrounded with compound houses and few public buildings. The compound houses are as old as the main palace, which were built for members of the royal family. For royal pride and significance, kings are allowed to move about with entourage and so do their facilities built to meet the level of their royal significance– this explains the main reason for multiple buildings around palaces in Yoruba kingdom just as palaces around the world as seen in earlier sections. The Aleshinloye palace is surrounded with buildings that serve domestic purposes like guest room, accommodation for the palace's guards and play room for the king's children. These buildings serving domestic functions were built with lesser vernacular qualities and techniques with no intriguing features whatsoever but their attachment to the palace has given them

the significant heritage feature to remain untouched (thus, abandoned) since the shift of rulership from the royal family.

According to the interview, the king's chamber and few surrounded royal family buildings had witnessed rehabilitation by British administration during the colonial period. Some British architecture features were added and the kings were made to believe that it is symbol of civilization befitting the abode as one of the "first class" palaces in Yoruba region. Major original features of the historical palace were retained and no record of major reconstruction was done apart from some additions. During inspection, the historic features of the palace are structurally intact and most concrete elements seem stable. Major load bearing members and elements of the palace which include reinforced concrete beams, slabs and columns all in good structural shape. The only type of distress that could be detected was the washing off of interior design and non-structural defects.


**Figure 4.17.** Location Map, Aleshinloye Palace

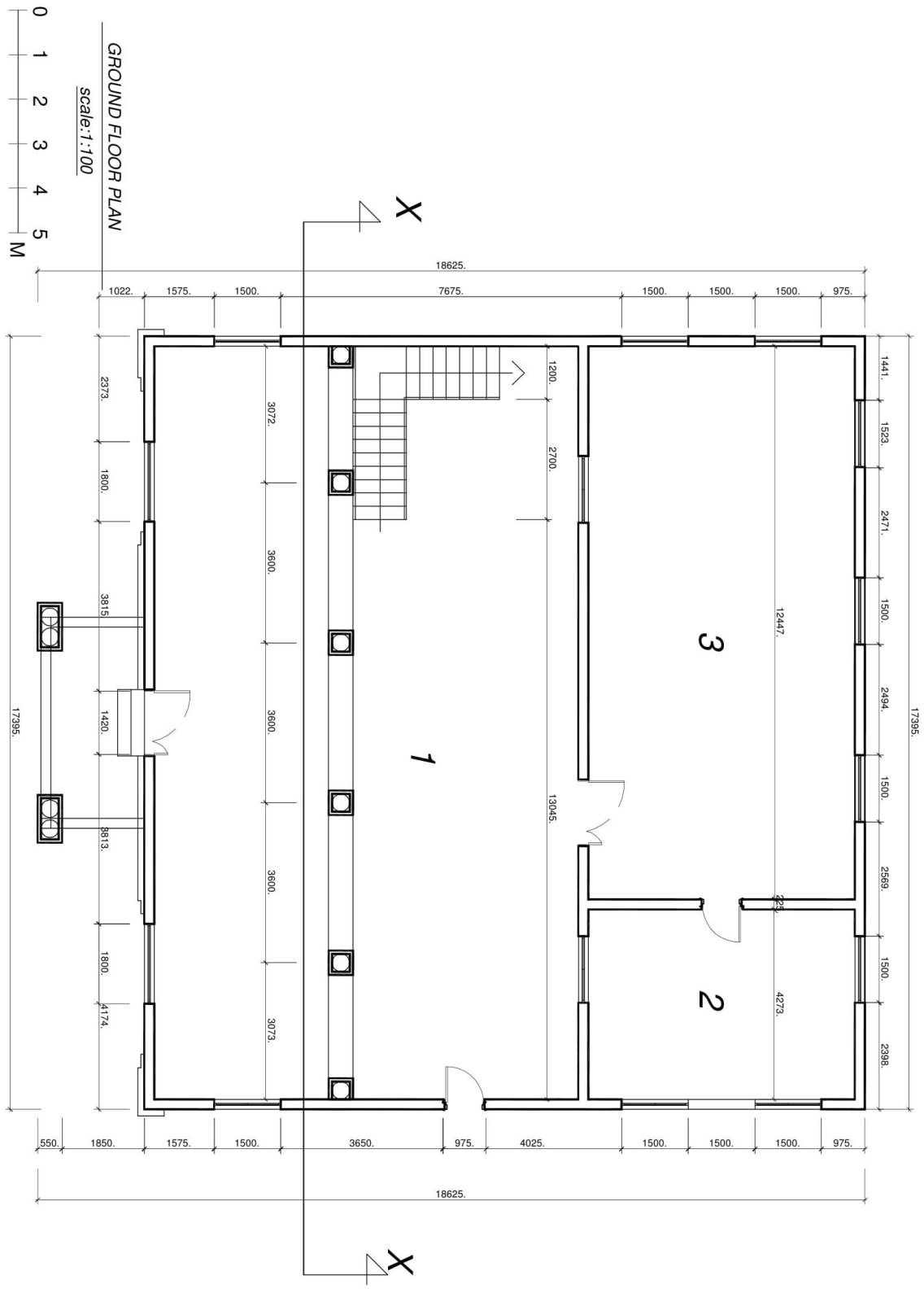



Scale: 1: 250

**Figure 4.18.** Site Layout, Aleshinloye Palace

**Figure 4.19.** Façade of Aleshinloye Palace, Ibadan

**Figure 4.20.** Other buildings within Aleshinloye Palace, Ibadan.

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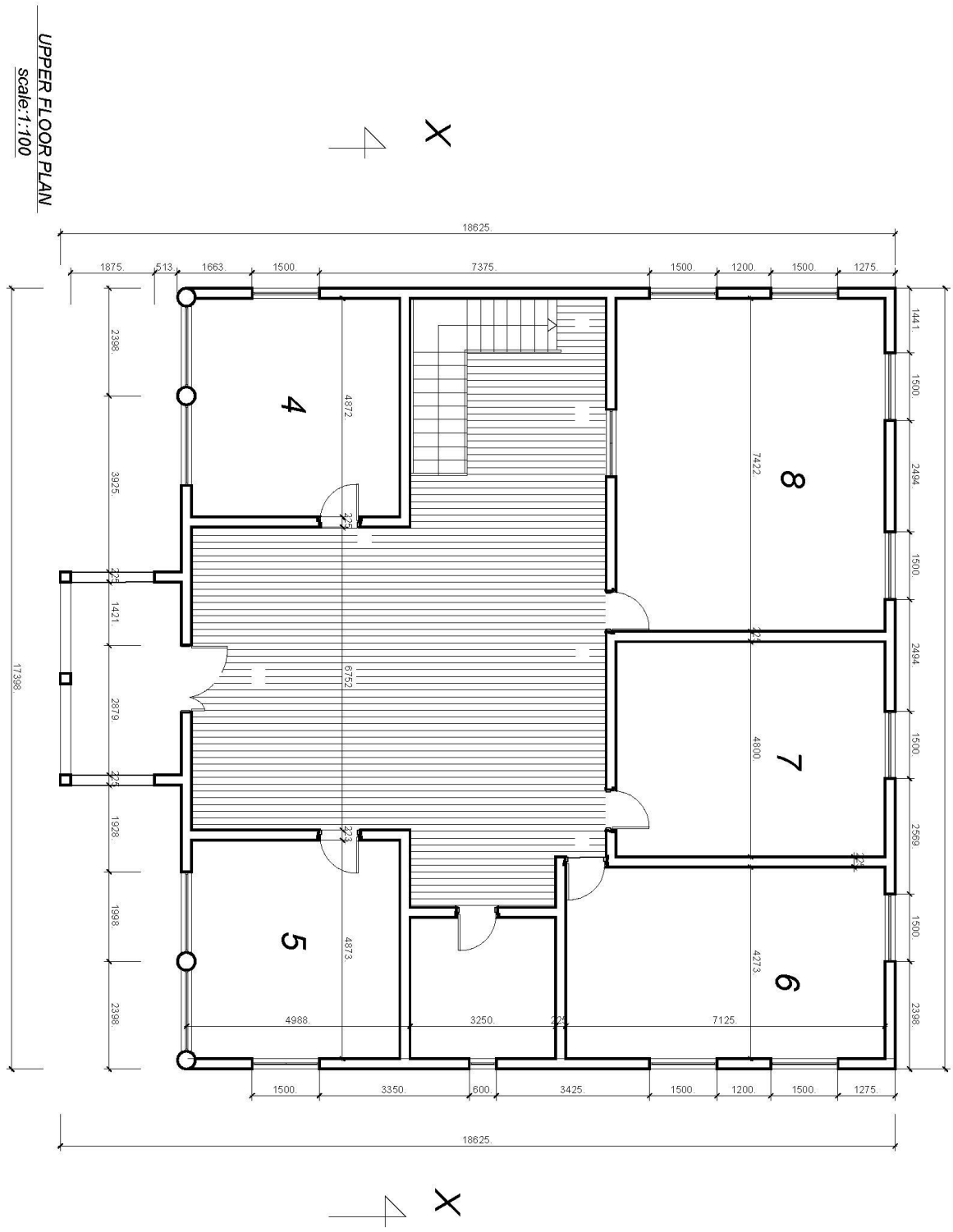
GROUND FLOOR PLAN



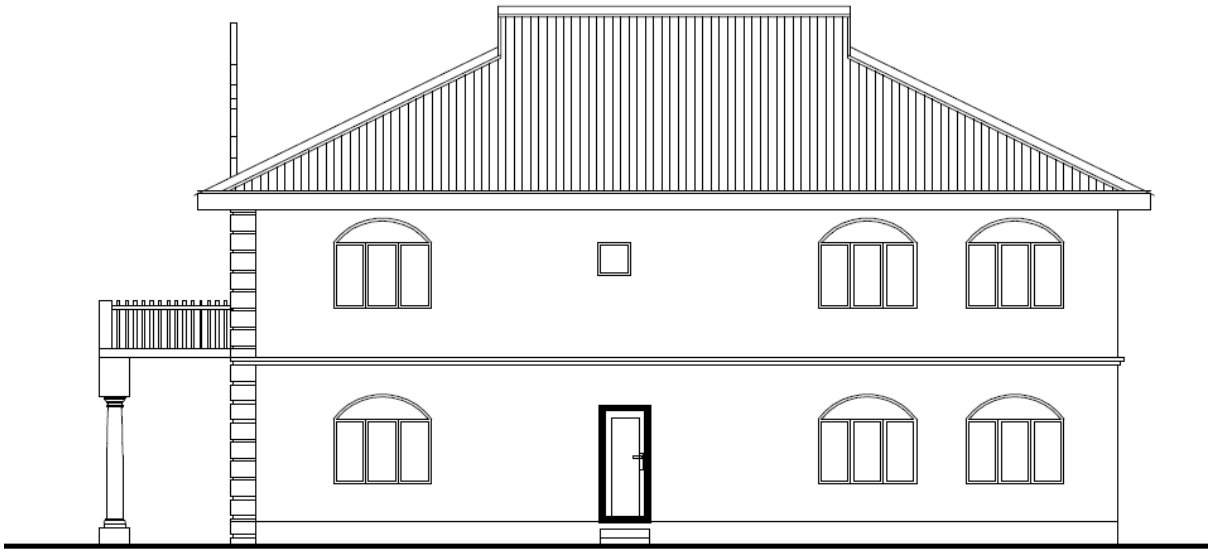

UPPER FLOOR PLAN Scale: 1:100

| REFERENCE | DETAIL |
|---|---|
| **1** | Ground floor veranda for visitors waiting for the king. The chiefs also used this spot to delegate and deliberate on community issues before entering the main palace. |
| **2** | Main palace |
| **3** | Private/Cultural room |
| **4** | Bedroom |
| **5** | Bedroom |
| **6** | ------- |
| **7** | ------- |
| **8** | King’s bedroom |

**Table 4.1.** Keys and references described in plan

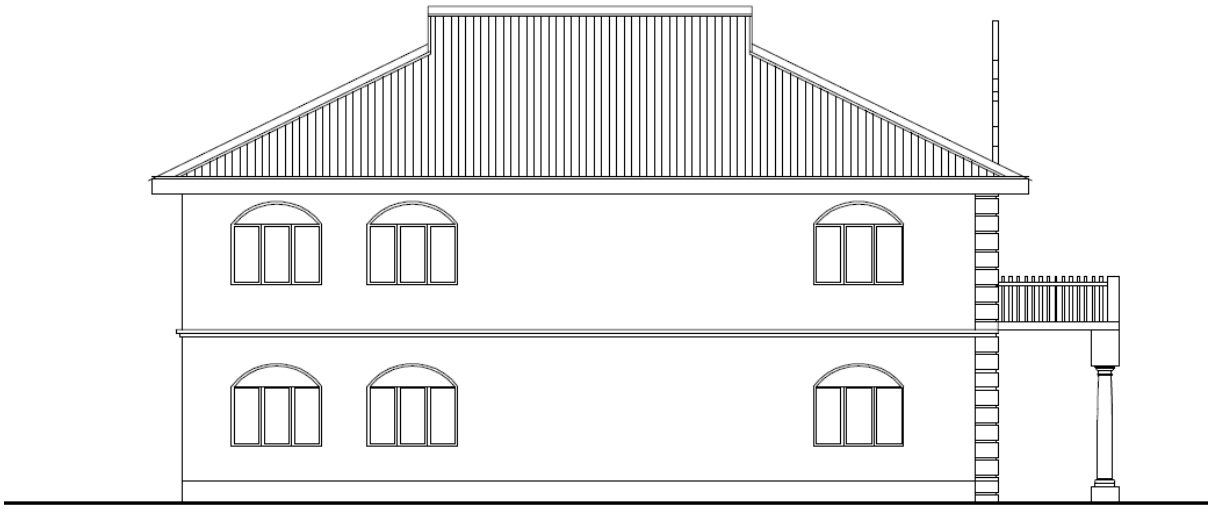
Main (entrance) façade

Scale: 1:100



Right Elevation

Scale: 1: 100



Left Elevation

Scale: 1: 100

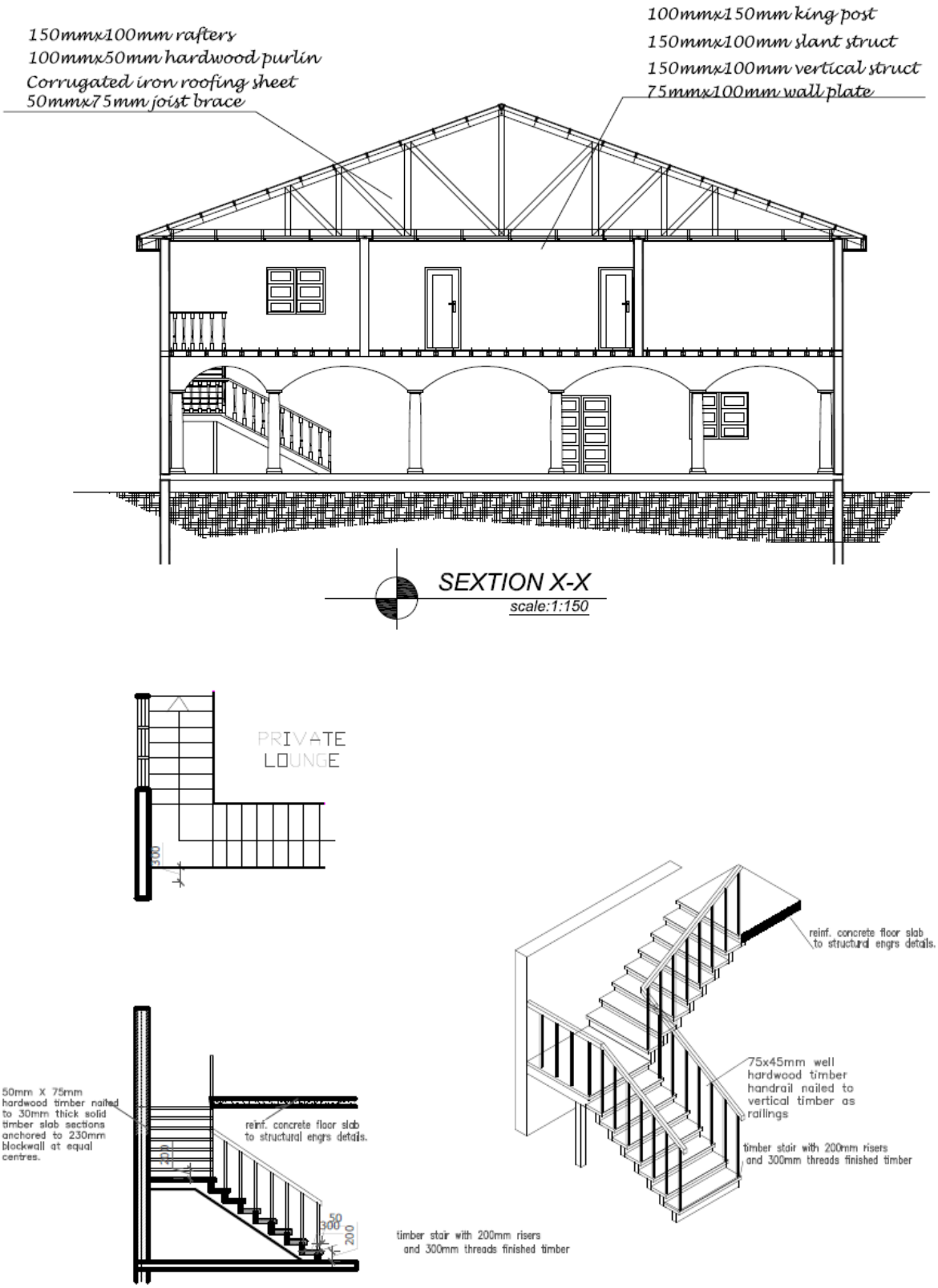



**Figure 4.21.** Architectural Drawings of Aleshinloye Palace

The architectural details of the Palace's elements are presented in figure 4.8 above and it would be seen from the section drawing that the pillars and interior stairs create majestic utilization of the spatial dimension of the interior.

## Features to be Retained

According to the approach adopted for the purpose of this study, some features of the palaces, are expected to be retained in order to maintain the historic/heritage values of the palace. Theoretical approaches on adaptive reuse– i.e. typological, technical and strategic approaches have thus, been applied to suggest some features that should be retained if the historical value and heritage of the palace under study are to be maintained.

Window Structures

Shown in figure below, the window structures happen to be in maintainable state and if at all, restoration could be carried out. It was noticed that the window structures still serve basic purpose of daylight allowed into the building and maintenance of room temperature resulting from adequate ventilation. Conventionally, windows of modern building often lack the kind of style and design of these window structures which range from the frame to the arc above the lintel. The arc on its own allows daylight even when the windows are shut which could be of fascinating purpose during rain. It was suggested that when performing restoration, no excessive alteration should be done so as to maintain the characteristics of these structures.

**Figure 4.22.** Window structures and frames

Columns and Pillars

The arrangement of the load bearing columns and pillars gives the palace a majestic outlook. This is shown in figure 4.11 below and such arrangement does not affect the spatial dimension of the interior. As a matter of fact, the only suggested intervention on these features was redecoration. Comparatively, the competition for space has eradicated this kind of internal column design which adds special features to the interior. Although it could be criticised that the presence of multiple pillars might be overdesigned but from an aesthetic and structural points of view, they add a special and unique outlook to the interior and offer stability.

**Figure 4.23.** Columns and pillars arrangements

Internal Stairs

This feature in particular is a historic feature and its structural form and material is part of the historic characteristics of the building that need to be retained. Presence of stairs within building seems to be a form of interior decoration in ancient structures. It adds to the view of total interior space and also adds a rare historic value. As shown in figure 4.12 below, restoration and redecoration could be carried out for uniformity by replacing stair cover, redecoration could be done by removing the wooden cover below the stairs since this part has almost no historic value. The impact of this redecoration process is seen in the overall cost which has little or no impact on the outlook of the member. In the same vein, to carry out total restoration, stairs must be returned to its initial conditions and another wooden cover must be

provided. To carry out this process, the stair cover should be provided before securing the rigidity of the stairs as proposed above due to vibration effect.

**Figure 4.24.** Internal Stairs

## 4.4. Significance of the Case Studies to the Community

From the interviews conducted, it was discovered that despite the fact that the two palaces had been abandoned for years, the people of the community still attribute great respect to the buildings. The people host community programmes such as community meetings, festival celebration within the premises of the palaces – this is the major reason revealed by the interview why the palaces haven't been put to any further use after the demise of the kings.

During inspection of the two palaces, it was discovered that the flow of new design in the adaptive reuse process would enhance the original rhythm of the palaces due to the fact that the origin of the historic rhythm of the building comes from the arrangement the exterior frames and interior features. As seen during inspection, the palaces features such as columns and supporting beams only require little architectural touches and repair rather than removal and demolition. The columns and beams, which are structurally carrying other members of the building, provide a spatial guide for new interior design and decoration of the walls and other features within and outside the building which allow enhancement of the historic rhythm and values of the structure.

The interviews revealed that there have been attempts by private owners to acquire the palaces but the importance and significance of the palaces to the communities have hindered the sale

of the heritage buildings. They two representatives of the royal families that participated in the interviews explained that the new use of the palaces might not be of significance to the community which might in turn, lead to eradication of the historical background of the people. Thus, the owners are sceptical in putting the palaces to new use but there was an agreement that with intervention from the government, they can release the palaces to the care of the local government so as to put the palaces to communal use.

The *Magaji* of Aleshinloye Palace explained during the interview:

> "*The people of this community are majorly Yoruba and they cherish their heritage a lot… they come here every year during festive period to pay tribute to the family of the king. This palace is important to people of this community and outsiders – we often receive visitors from different schools that come on excursions."*

Generally, historic buildings have relevant roles in the landscape of cities and communities where they exist forming images which represent the techniques of architecture, style of construction and the lifestyle during the period they were constructed. The Aleshinloye Palace is situated in a commercially active area in the ancient city of Ibadan, Oyo state. Proximity to commercial areas makes it more noticeable to the people of the community and by-passers. Also, the architectural design of the palace has interesting and fascinating aesthetic values which calls attention of many (according to the interview, the palace has been used for documentary of heritage of the Yoruba region of the country). Valuable architectural techniques and construction styles were the pride of the past and this could be seen in the rigidity and stability of the palace which include unique building approach and techniques and unique materials of construction.

From the foregoing, it can be concluded that Aleshinloye Palace offers great potentials to its owners, community and sustainable criteria for adaptive reuse. The structure requires little architectural efforts to provide energy conservation in terms of heat regulation, thermal comfort, ventilation and daytime lighting.

## 4.5. Potential of Case Studies in Building Adaptation

All along, there has to be a rhythmic correlation between the interior and exterior largely through columns and window placement. The interiors of the palaces under study show common rhythm in division of the spatial dimension of the building spaces. These fascinating features could be put to new use rather than demolition of those structural interiors; the least

could be the replacement of the forms with other building support systems in case of intervention.

Inspection of the two palaces, displayed that the flow of new design in the adaptive reuse process would enhance the original rhythm of the palaces. The origin of the historic rhythm of the building comes from the arrangement the exterior frames and interior features. As seen during inspection, building features such as columns and supporting beams only require little architectural touches and repair, rather than removal and demolition. The columns and beams, which are structurally carrying other members of the building, provide a spatial guide for new interior design and decoration of the walls and other features within and outside the building which allow enhancement of the historic rhythm and values of the structure.

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## 4.6. Evaluation of Aleshinloye Palace

In the instance of lagging and insulation, the sizes and numbers of the windows limits heat loss and gain thus maintaining appropriate room temperature to provide comfort during harsh weather conditions. Construction materials used are mostly brick for the walls and concrete for structural elements to withstand the effect of vibration from outside and within the building. In terms of water conservation, the only possible mode of entry of water into the building is

absorption through the walls which can be prevented by using water proof paints and decorations for the exterior. The interior spatial dimension which may be required for single person are optimum and structural members can cater for enough weight for resident. Furthermore, the materials for construction have long life cycle and require low maintenance procedure which could enhance the preservation of natural and original conditions of the building even while put to new use.

Economic Values

The durability of the construction materials of the palace seems to have kept the structure intact until present. This flexibility, durability and stability qualities which the building possesses make it have a high possibility, power and potential for adaptive reuse to new economic uses. This could serve as an economic revenue means to the family and community/society as it could either be put to use directly or on lease to private individuals. The interview explained that with the current state of the building and the maintenance of the heritage of the structure, the property has been valued for **₦45,000,000**. With appropriate intervention and correction of defects, the property could value for as high as **₦60,000,000**, with an appreciation of about additional **₦15,000,000.**

Cultural and Social Values

The Aleshinloye Palace is a royal representation of the ancient lifestyle of the Yoruba clan in Nigeria. It still remains standing and has effects on the cultural and social identity of the area which it is situated in Ibadan. As the monarchy pattern of this region, there seems to be many palaces that have been abandoned after use but have extremely dilapidated and require immense restoration programme. Meanwhile, being one of the early palaces used by the *Olubadan* in the state, it contributes to giving and improving both cultural and social identity of the area. The palace is a symbolic representation of what royal value reflects in ancient time thus, adding significantly to the landscape of the community.

Historical values

The Abass Alenshinloye Palace hold quite a lot of historical and memorable values attached to it. Being one of the first palaces in Ibadan, its historical relevance has triggered the interests of movie producers to look into the lifestyle of the owner and Yoruba clan in entirety. It has also attracted tourism destination and documentary attention not only interested in the history of the owner but also, history of the building and the community.

## 4.7. The Proposed New Use for Aleshinloye Palace

**S**uggestions were made during the investigation, considering the stability of the building it could potentially and adaptively be reused as media room and community area (such as nursing home). These would always propagate the historic value of the palace. Also, it could be used by private individuals or the community as a public library or customary court in which the height of the building would serve an extra advantage to suit the new use.

New proposed use of the building would determine the new materials and finishes to be applied during rehabilitation process. The importance of materials and finishes in interior was emphasized by Leimenstoll (1988) as materials evoke distinguishing images and qualities in a building. It is important to use appropriate materials and finishes so that the rehabilitation process would render the building befitting for the new use. It was discovered that the materials originally used in the constructions and interior design of the palace under study were concrete flooring, brick walls, wood-decking ceilings, and concrete beams and columns. While new materials could be introduced during the rehabilitation process, it is also important to understand how the historic significance of some materials and their corresponding contribution to the historic characteristics of the interior. On another hand, Brooker and Stone's (2004) explained that finishes in interior architecture encompass both colour of the coating and texture of the materials. To enhance the relationship with the building, enough scrutiny should be done when selecting materials and finishes for surface designs.

The application of wrong materials and finishes could alter the historic value of the interior. The following table present appropriate materials and finishes that could be used for the suggested potential adaptive reuse of the palace.

| ADAPTIVE REUSE | | MATERIALS/FINISHES | EFFECT(S) |
|---|---|---|---|
| 1 | MEDIA ROOM | Cinder blocks fixed on the walls | Provide appropriate acoustic effect and control of sound |
| 2 | COMMUNITY AREA | Soft carpet and cork flooring | For cushioning and comfort of the underfoot and protection against injuries from falling. |
| 3 | LIBRARY | Floor materials: ceramics, wood, concrete, carpet, vinyl, terrazzo and cork | Reduce slip and noise production |
| | | Finishes: ceiling finishes to incorporate ventilation, acoustic and lighting. Wall finishes to enhance lighting of the space. | Important for aesthetics, acoustic and functional aspects |
| 4 | CUSTOMARY COURT | High-grade hardwood, coating materials and solid hardwoods should be used as design standards for doors, trims, and wall panelling. | Emphasize the dignity of the court |

**Table 4.2.** Possible Materials and Finishes for the Proposed New Use

The materials stated in the table above are not the only materials that could be used for such adaptive reuse but they offer the best options so that the building becomes befitting for new use.

# CHAPTER 5

# CONCLUSIONS, SPECIFIC RECOMMENDATIONS AND FUTURE RESEARCH

Palaces are buildings of major importance to cultural heritage. Their historic value and features reflect their significance and relevance to the local culture and history of the community. The significance of these palaces has a direct impact on the citizen/indigenes in terms of social benefits. An indirect economic benefits reflects onto the societies where they are constructed because they possess historic characters that hold the memory of lifestyles of the past. This study is an exposure on the behaviour of historic palaces built with traditional techniques and local materials within the Yoruba region of Nigeria. It is also an awareness on how these historic palaces and buildings can be rehabilitated, restored and renovated for adaptive reuse rather than abandoning them. It also gives an understanding on how modern design and ancient vernacular constructions could work alongside each other by suggesting possible interior decoration and designs suitable for the rehabilitation process and for each suggested adaptive reuse.

As a result of observations and information gathered during our interview, evaluation of selected case studies was possible. It was highlighted that there are a host of possible adaptive use opportunities and potentials for existing palaces. The open interiors of these historic palaces offer more opportunities for adaptive reuse because their interiors are commonly seen as areas of architectural significance. Restoration and/or rehabilitation programmes are simpler to carry in comparison to recent palaces. Palaces also consist of unobstructed interior spaces and spatial dimension beyond the columns and other structural members that support interior redecoration of the buildings. Often at times, the readiness of interior structural members of ancient architecture to support the new designs helps the architect to be able to create rhythm and flow throughout the multidimensional space of the interior. This study revealed the historic characters of interiors and the potentials of abandoned palaces. If well maintained and appropriate rehabilitation processes could enhance the potentials of the palaces for adaptive reuse.

## 5.1. Conclusions

This research showed adaptive reuse potentials of abandoned palaces in South-western region of Nigeria. Having taken one palace with great potentials– the Abass Aleshinloye palace, as its major case study. Generally the study exposed that these historic buildings which hold characteristic historic values could be put to a new functions which would suggest the type of rehabilitation procedure to be carried out on them.

From review of literature in earlier sections and outcome of investigation during data gathering, historic buildings tend to have high possibilities in adaptive reuse. The new functions are often suggested after enough information, evaluation of the status and analysis of the structural stability have been scrutinized. New uses as suggested in this research for the palace under study are so because possible need of the immediate community and the relevance the new use could have on the life of the people within the community.

Having seen the potentials of the abandoned palaces in building adaptation, a juxtaposition of all theoretical approaches highlighted suggested were to be applied in order to fully achieve the longevity, social and economic prospects foreseen on the adaptation process. The results thus show that technological advancements and the emergence of modern architectural design could help enhance the chances of these abandoned palaces and this makes interior redecoration programme technically easy. As established in the study, when investigation of the status of buildings intended to be put to adaptation is carefully carried out, it is easier to choose the kind of intervention programmes to be adopted – rehabilitation, restoration, renovation or redecoration. This will also help in keeping original historic characteristics and context of retained members thus sustaining the historic values the building hold.

## 5.2. Specific Recommendations on Case Studies

Palaces, as the case study used for this research are imperative part of the culture of any community that practices monarchy rulership. Most often, these buildings are owned and maintained by the royal family. Nonetheless, buildings need not be abandoned when they are out of use. In this line, the following points could enhance the progress of putting historic, and vernacular building to adaptive reuse.

- To retain historic elements during the rehabilitation process for adaptive reuse, the three approaches– technical, typological and strategic should all be applied as each has

building element character it aims during reform/rehabilitation process. This would help retain many historic elements of the ancient structure.

- There should be a thorough arrangement in the selection of a new design intended for the rehabilitation so that there would be adequate connection and rhythm between old and new design/elements.
- External features of the historic building should only be restored to maintain the original style of the building. This process would be a source of reminder and fascination to new generation of how the lifestyle of ancient royal architecture.
- The interior multidimensional spaces within the building should as far as possible be retained and historic features be well preserved. These truly determine the historic value of the building. Gross additions within the building should be avoided as this would alter the spatial dimension of the interior.
- If the ceilings and the flooring systems are still in good condition, attempt should be made to only restore them with little redecoration, if any at all. Removal of flooring/ceiling systems or grossly altering them could question the sustainability of historic value of the building.
- As in this case study, whenever there are stairs within a building, rehabilitation programme should cater for their retainment as they make part of the historic conformation to the building.
- Columns, doors, timber beams and flooring are all members of cogent historic significance and they should be retained and attempts should be made to keep them well preserved under new functions.
- Finishes and paints should be determined by the type of new function the building is going to serve. In cases where colour does not matter, attempts should also be made to decorate the interior with a close form as in original design.

## 5.3. Future Research for Adaptive Reuse

While the recommendations made in the above section are specific to vernacular architecture during building adaptation, this section recommends some future studies on adaptive reuse of vernacular architecture and other buildings as far as building adaptation is concerned.

- Nigeria clearly needs to set up an organisation that would cater for her heritage buildings, structures and monuments and list these structures for conservation and not to be demolished. This process would help the country save heritage structures from

abandonment and demolition. This organisation would create an archive and a database of old, vernacular and historic buildings and monuments with updated information on the type of maintenance programme suitable for them. The country could generate economic benefits by creating astounding reuse opportunities from the buildings.

- Architectural and structural analyses of historic buildings to be put into adaptive reuse should be adequately done in order to achieve the purpose of adaptation and not expose the building to severe use that they cannot withstand. This will protect the elements of the building from failure as the maximum load they can bear (with their age) would be estimated.
- Vernacular architecture and ancient buildings should not be abandoned with no maintenance and intervention programme to keep them in good condition. Abandoning would only lead to further deterioration of members of the building and would only render it as space occupier which economically not encouraging as there is continuous competition for space to put up new structures.
- Nigeria should opt for adaptive reuse of her historic buildings rather than abandoning them to destruction and deterioration by climatic and/or physical factors. This, as established in earlier section would benefit communities within the country in many ways.
- For further studies on adaptive reuse, there should be adequate estimation of subsequent maintenance and rehabilitation costs of buildings before suggesting adaptation. Other monuments, buildings, churches and mosques that have been abandoned could also serve as fascinating study points.
- Potential adaptive reuse should be suggested such that the old structure would be able to serve its new functions efficiently for much longer period requiring little cost for maintenance. Adaptation should be suggested along with potential new functions by the architect having understood the stability status of the old building.
- Interior during adaptation is paramount as new functions would determine what finishes and material to apply. Thus, the architect needs to make appropriate suggestions as this would make adaptation successful and make the building fit for its new use.
- When interior lighting isn't sufficient, plans should be made such that no gross alteration is done. Appropriate materials should be used to increase interior lighting rather that cutting part of the building which could alter historic characters the building possesses. Exposing the building to extreme procedure which involves vibration could

further weaken the members thus, it is recommended that original source of lighting in windows and arches should be maintained.

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