EVALUATION OF HOUSING QUALITY IN ABAJI CITY, FEDERAL CAPITAL TERRITORY, NIGERIA

BY

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M.TECH/SSSE/2006/1513

DEPARTMENT OF GEOGRAPHY

FEDERAL UNIVERSITY OF TECHNOLOGY, MINNA

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NOVEMBER, 2009

DECLARATION

I, Sule, Abass Iyanda, hereby declare that this thesis titled "Evaluation of Housing Quality in Abaji City, Federal Capital Territory, Nigeria" is a product of my own research work under the supervision of Prof. J.M.Baba of the Department of Geography, School of Science and Science Education, Federal University of Technology, Minna.

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Name of Researcher

.....
11/01/2020
Signature & Date

CERTIFICATION

This thesis titled: "Evaluation of Housing Quality in Abaji City, Federal Capital Territory, Nigeria" by: Sule, Abass Iyanda (M.Tech/SSSE/2006/1513) meets the regulations governing the award of the Degree of Master of Technology (M.Tech.) of the Federal University of Technology, Minna and is approved for its contribution to scientific knowledge and literary presentation.

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ABSTRACT

Housing as we all know to be very important to all, both for the protection from natural hazards and well-being of all human beings. It is one of the major components of the urban environment that if the quality is measured, the quality of urban environment may be determined or known. In view of this, this thesis titled: 'Evaluation of Housing Quality in Abaji City, Federal Capital Territory, Nigeria' aimed to assess the housing quality in relation to environmental quality in Abaji City, FCT, Nigeria. Data for this work were collected through structured questionnaire and administered based on stratified random sampling (i.e. zones of traditional and non-traditional residences). Data collected for the evaluation include, house structural characteristics, in-house and environmental facilities. Analysis of data was done by factor analysis with statistical package for social science (SPSS 10.0) and excel package. The mean housing quality of each houses sampled were arrived at after scoring the variables (see appendix II). The results depict that; compound houses and bungalows dominate Abaji City, and generally Abaji City lack houses with good quality. Result also shows that, there is no significant difference in type of buildings found in both zones of the study area. However, the study revealed that, there is positive relationship between the type of building and rental value, and between road accessibility and rental value of a house etc. Based on the findings, one of the recommendations made is that, building regulations must be in operation or enforced by the appropriate officers of local authority to prevent further development of ram-shackle buildings in the area. Secondly, constant improvement on the infrastructural facilities to cater for population explosion in the nearest future of the area is necessary for sustainable development.

TABLE OF CONTENT

CHAPTER FOUR: RESULTS

LIST OF FIGURES

LIST OF PLATES

CHAPTER ONE

INTRODUCTION

1.1 GENERAL INTRODUCTION

There seems to be no consensus on the meaning of the term housing. To consider housing as shelter or the physical structure is evidently a very narrow view of the concept of housing. "The concept of housing is more than merely a physical shell". Housing encompasses all the auxiliary services and community facilities, which are necessary to human well-being. Therefore, it should be considered an "extension of human frame. It should respond to the needs of its inhabitants both in function as a garment does". (Majzub, 1978 p397).

Aboderin (1975), asserts that shelter represents one of the most basic human needs and has no doubt a profound impact on health, welfare, and productivity of the individual. In National Housing Policy (1991), shelter has been described to be universally accepted as the second most important essential human need after food. Housing in all its ramifications is more than mere shelter since it embraces all the social services and utilities that go to make a community or neighbourhood a liveable environment. The infrastructure of water, sewerage, power, telecommunications, roads and

footways are required to support housing neighbourhoods. The availability of such an infrastructure will have a strong impact on the quality of life. Without such facilities, a site cannot function. In other words if the facilities are not available, it can mean that it is inappropriate or impossible to develop a site for a particular use. A developer will compare the costs of providing the various facilities. A comparison of the relative efficiency of different layouts in relation to infrastructure costs will also be made. There is a saying that, a sound environment is supposed to be a heaven on the earth; a healthy environment where living is a joy, not a burden.

Sound environments are usually well-organized environments that are sustainable tempered by the socio-physical and socio-cultural peculiarity of such environment. This has a far-reaching implication for the general well-being of the populace, which in turn translates into a well-motivated and efficient population for the progress of society. However, surely environment is anything that can be seen, felt and touched and which can influence individuals. Morenikeji (2006) defined, environment as "everything else except me", between 60% and 70% of urban environment is made up of houses and thereof, the quality of urban environment depends largely on the quality of the houses.

Apart from the houses, household and neighbourhood facilities and sanitation are also germane to the high quality of the urban environment. Therefore, refuse disposal system, availability of water and energy, road and drainage system if they can be measured can give a clue to the quality of the environment. It is on this premise that an attempt is being made to evaluate housing quality in relation to environmental quality of Abaji City, Federal Capital Territory, Nigeria.

1.2 STATEMENT OF THE PROBLEM

Housing is one of the three basic needs of man. Yet housing need, more than most other human needs, largely remain unsatisfied in almost all developing nations of the world, Nigeria inclusive. Sometimes one will be pre-occupied by the question of what constitutes an ideal environment for housing. Environment is said to be anything that can be seen, felt and touched and can influence individuals. Simple example: it is assumed that there is strong relationship between overcrowding and health of a particular community. Generally, housing is said to relate to the quality of life. As an environmentalist, the question goes further: Is there any association between the quality of a house and its rental value? Is there any relationship between accessibility and house value? These are a few out of the problems that need to be assessed.

1.3 AIM OF THE STUDY

The aim is to assess the housing quality in relation to environmental quality in Abaji city.

1.3.1 SPECIFIC OBJECTIVES OF THE STUDY

1. To identify and map out the type of residential houses in the study area.
2. To assess the quality of the houses in the study area.
3. To assess the availability or lack of infrastructure facilities in the study area.
4. To measure the correlation between housing quality and corresponding house values (Rental value).

1.4 Research Hypotheses

In qualitative research of this nature, it is pertinent to validate the work with genuine reasons either for an acceptance or for rejection of presupposed situations of variables relating to the work under consideration. This can only be achieved by setting hypotheses, which could be verified using appropriate statistical tools. For the purpose of this work, the following null and alternative hypotheses were set to uncover the salient factors, which could assist in evaluating the housing quality in Abaji City, Abuja Nigeria.

Hypothesis: 1

H_0: There is no significant relationship between building type and rental value.

H_1: There is significant relationship between building type and rental value.

Hypothesis: 2

H_0: There is no significant relationship between accessibility (road network) and rental value.

H_1: There is significant relationship between accessibility (road network) and rental value.

Hypothesis: 3

H_0: There is no significant difference in infrastructural facilities available in the two selected zones of the city.

H_1: There is significant difference in infrastructural facilities available in the two selected zones of the city.

Hypothesis: 4

H_0: There is no significant difference in the quality of materials used for houses, condition of the building items in Abaji city, (Wall, floor, window and ceiling).

H_1: There is significant difference in the quality of materials used for houses, condition of the building items in Abaji city, (wall, floor, window and ceiling).

1.5 JUSTIFICATION FOR THE STUDY

The aim of any prudent investor is to maximize profit. It is evident enough that not all that goes into real estate investment (Housing) make profit. That housing plays a very important role in human life and human society is well known. It has tremendous social and economic impact on the total living environment of the world. It has direct and immediate influence on health, education, and economy, and environment, political and social life of any society.

Abaji city by its geographical location is the gateway to the Federal Capital City (FCC), Abuja. Yet, it is an eye-sore in terms of its development. A study needs to be carried out to identify the types of residential houses and the neighbourhood infrastructure in the area. The improvement of the area is necessary and must be of serious concern to all stakeholders of Abaji area council. This is the only way the area can attract various developers, and real estate investors.

1.6 SCOPE OF THE STUDY

This research work will examine the various types of houses and their facilities, infrastructure facilities and the corresponding house values. These will be examined with particular reference to zone of traditional residence and non- traditional residence. Data collected will be analyzed using t-test and method of p-value as well as correlation method. To this end, the study will without doubt be significant to the developers and real estate investors who are primarily concerned with prospects for receiving a safe and adequate return on their investments located in good environment.

1.7 BACKGROUND TO THE STUDY AREA

The idea of a new capital city as the seat of government in Nigeria was borne out of the need to curb the deteriorating problems occasioned by the congestion of Lagos metropolis and to relieve Lagos of its seamless web because of its multiple roles as a state and federal capital. Based on these facts, a panel was set up on 9th August 1975, under the distinguished chairmanship of honourable justice T.A. Aguda, to study and advice on the location of a suitable federal capital for Nigeria. Following the panel's report, Abuja was recommended as the best place for the new capital city, based on its centrality vis-à-vis ease of accessibility from other states of the

federation, security and political advantages. Subsequent to this report, Act no 6 of 1976 immediately established a body called the Federal Capital Development Authority (F.C.D.A). This body was charged with the responsibility of planning and developing of Abuja. The Federal Capital Territory (F.C.T) is located in the geographic centre of the nation. It lies between latitudes 7^0 20' and 8^0 25'North of the Equator, and between longitudes 6^0 45'E and 7^0 39'E. It occupies a space of about 250 square kilometers. It is bounded to the North by Kaduna state, to the East and Southeast by Nassarawa state, to the South-west by Kogi state and in the West by Niger state.

The Abuja Master Plan: In order to achieve a seamless and well-structured development of the FCT, a Federal Capital Development Authority, (FCDA) was established with the mandate to execute, implement and oversee the capital city. To achieve this lofty goal, the FCDA sought the help of an international consulting agency, International Planning Associates, to draw a Master Plan for the city. This Master Plan was approved for implementation in February 1979.

The Abuja Master Plan covered 250 square kilometers for the envisaged Federal capital city. Its design provided for a four-phase development with the city divided into sectors and further sub-divided into districts. It was

projected that each sector would accommodate between 100,000 to 250,000 people. Thus, the city would have a population of 1.6 million people at the end of phases one and two. (See land use analysis in the table 1 :)

Table 1: Land use analysis of the Federal Capital Territory (FCT)

Category of Land Use	Land Budget	% of Total
Government Activity	500.00ha	1.96
Services	891.00ha	3.49
Residential	12,486.00ha	48.97
Light Industries	920.00ha	3.61
Infrastructure	1,840.00ha	7.22
Commercial	561.00ha	2.20
Open space & Recreational		
Facilities	8,300ha	32.55
Total Hectares	25, 498.00ha	100.00

Adapted from: Ogunyomi, (2006)

The Plan was predated on a linear development pattern to stimulate growth from the city center outwards in two directions and parallel development corridors on both sides, in form of a linear park.

Phase one of the Federal Capital Territories comprises five districts: Garki, Wuse, Maitama, Asokoro and Central Area- all of which have been provided with detailed site development plan and engineering designs. Within the exception of the central districts, the other four districts i.e Garki, Wuse, Maitama, Asokoro have been provided with basic facilities. They are residential areas for both private individuals and civil servants. In addition, a number of dispersed satellite towns have been created and developed. They include Kubwa, Lugbe, Karu, etc. In each of the city's subdivisions, ample area is given for balanced use of residential, high commercial public and private services like the sporting Olympic size, state of the art national stadium and recreational facilities like the millennium parks and gardens. Also, infrastructural facilities and services are provided by way of well connected linear and circular road networks, power, water and sewage are also provided for. It is serviced in the centre by one main market, the Wuse modern market. Other markets are Gudu market, Utako market, Garki model market, Gwagwa and Karu markets. Abuja also has some natural landmarks like the Aso hills (near the presidential villa), Katampe hills and

Gwagwa plains. Two dams, the jabi dam and the lower Usuman dam, which supply water to the residents of Abuja, also service Abuja.

Abuja has a favorable climatic condition. The maximum mean temperature is at 42^0 C between the months of May and June. The minimum mean monthly temperature on the other hand is 28^0 C between December and January. The original settlers of the villages that make up Abuja are the GBAGYI'S. The ultimate population projection for the city when completed is 3.1 million people. Presently, the population far outnumbers the figure projected. The phase one is about 80% completed. However, the second and third phases are to be developed gradually over the coming years. Phase two has started witnessing some form of development especially around the Kukuwuaba district where the national stadium and national hospital are located. Mabushi district where the Federal Ministry of Works, the Ministry of Housing and Urban Development, and Gwarimpa district where the Federal Housing Estate is located.

The Federal Capital Territory is divided into six (6) area councils namely; Abuja municipal area council, Bwari area council, Gwagwalada area council, Kwali area council, Kuje area council and Abaji area council. Abaji area council, according to the Ministry of Federal Capital Territory (M.F.C.T) yearly bulletin 1993, pg.16, the area covers an area of 17,000

square kilometers with an estimated population of 700,000 people. The climatic condition of the area is that of a tropical continental climate: hot and humid. There are two main seasons, i.e. dry and wet seasons. The town is structured from the Chief " ONA" who is the traditional ruler of Abaji and at the same time the chairman Abuja council of traditional rulers. Egbuira, Hausa, Nupe, Ganagana, Gwari and Bassa speaking groups people the town. Others like the Yoruba and Igbo are now living in this area for their businesses and because of house demolition in the main Abuja city during the Obasanjo administration. Abaji has grown up in population and many squatters are now resident in it.

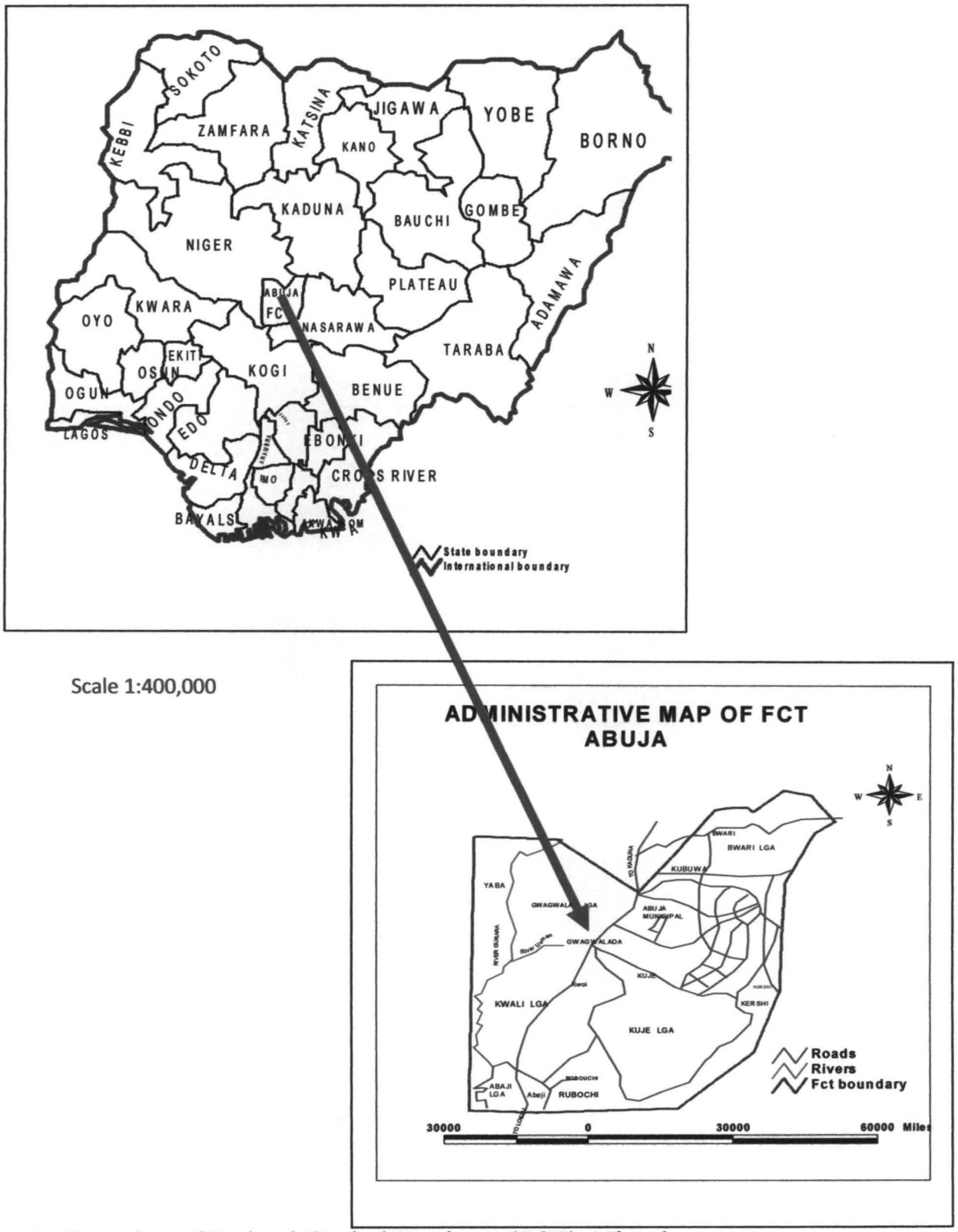

Figure 1: Location of Federal Capital Territory (FCT), Nigeria.

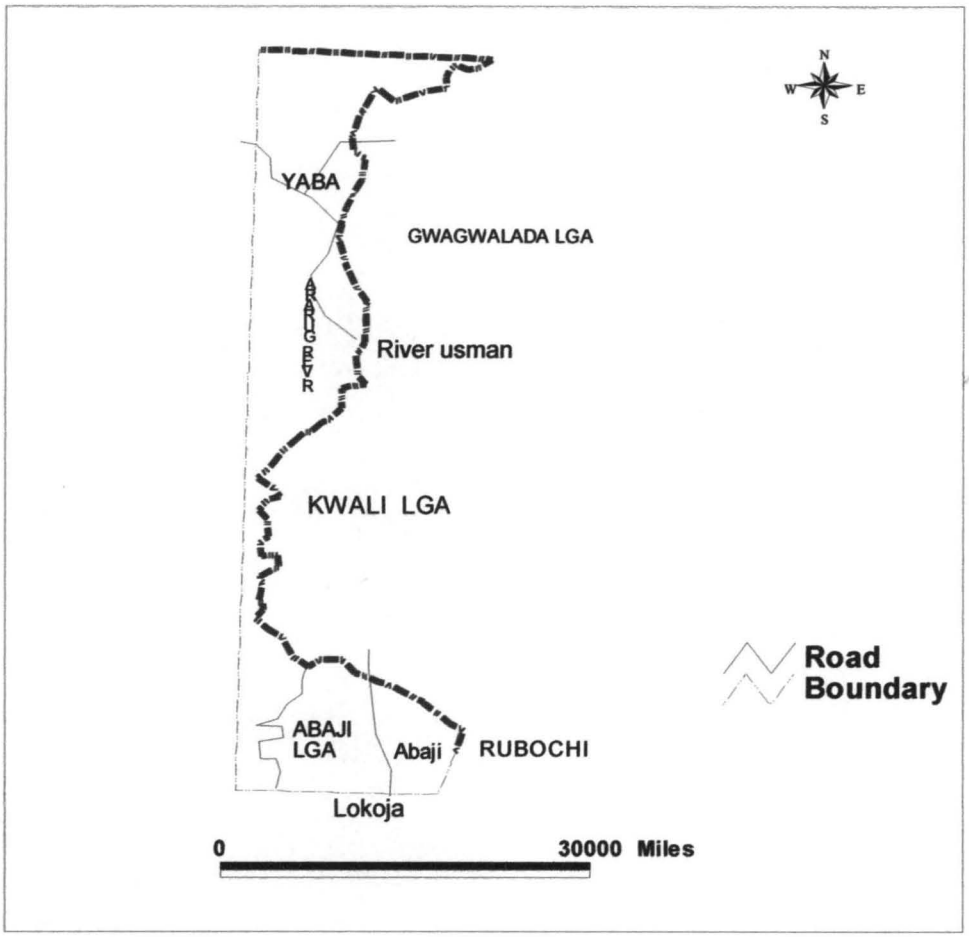

Figure 2: Abaji Area Council Map, Federal Capital Territory, Nigeria.

CHAPTER TWO

LITERATURE REVIEW

2.1 CONCEPTUAL REVIEW

In order to have a proper background and a better understanding of the scope and nature of this research work, relevant conceptual reviews are imperative.

2.1.1 Housing

The term housing has been viewed and conceptualized in various ways by different experts. Many authors have viewed it as an important component of human settlement, which renders tremendous services to humanity. Its conception has, therefore, transcended the conservative view of four walls and a roof structure meant to protect man from external aggression. Thus, housing as a shelter is a necessity of life that has been recognized world-wide as one of the most important needs of man next only to food; however, house ownership by low-income earners in developing countries is a problem that has defied a plethora of solutions.

World Health Organization (1991), as quoted by Ogunyomi (2006), defines housing as residential environment which includes, in addition to the physical structure that man uses for shelter, all necessary services, facilities,

equipment and devices needed or desired for the physical and mental health and social well-being of the family and individual. A combination of any bungalow, block of flats, duplex, terrace, and maisonnette and mansion estate, with infrastructures is termed housing, (Kemiki, 2003).

However, housing is defined as "the process of providing a large number of residential buildings on a permanent basis with adequate physical infrastructure and social services in planned, decent, safe and sanitary neighbourhood to meet the basic and special needs of the population".

Moreover, housing is defined as "the process of providing functional shelter in a proper setting in a neighbourhood supported by sustainable maintenance of the built environment for the day-to-day living and activities of individuals and families within the community", (National Housing Policy, 2006). Housing is both shelter and symbol. It serves as physical protection, psychological identity and a foundation for security and self-respect. That is, the value attached to a house makes the owner a prominent member of the society. Some social organizations make ownership of a house part of the overall criteria of being a member. Desirably, in some societies, a chieftaincy title might not be conferred on someone who does not own a house within the locality. Housing is the maker of human identity, which determines, largely, the success of man in life. It is also seen as a tool for

social development. Housing is the basis for all human activities. Every person is affected in his day-to-day activities by the type of house in which he/she lives. Housing as a social symbol means different things to different people. However, generally, it is a symbol of heritage.

Many perceive housing as a symbol of security. This explains why people run into their houses when there is a problem outside. A house is seen as a sacred entity. Everything about it is considered sacred, from the land on which it is built, onto the wall, door, and roof. Every member of the society desires to own a house as a source of prestige, self-recognition, respect and fulfillment. Thus, housing is viewed as a symbol of man's status, an extension of his personality, a part of his identity, a determination of many benefits and disadvantages of the society that will come to him and his family (Agbola, 2005). Housing is symbolic in that the value that man attaches to it cannot be easily measured. Socially, housing is central to all human activities. In it, man lives, grows, procreates and declines (Agbola, ibid). The place where an individual lives and works has profound influence on his behavior and performance. An individual, based on his value and preferences, may prefer living in a noisy or slummy environment to living in a quiet or clean environment.

Economically, housing is symbolic because it is a very stable investment. It has high potentials of returns over a long period. Its contribution to national economy is significantly high as it is a yardstick by which the health and ill health of a nation can be measured. Human behavior depends on symbol, and housing is one of the most important aspects of human activities. Since housing is crucial to an individual and the society as a whole, it is recommended that housing should be given adequate attention both by private individuals and the government because if the problems ravaging the housing sector are solved or reduced to the barest minimum, nearly all other problems would have been solved or reduced. For example, if the problem of slum proliferation is tackled, associated problems such as poverty, poor environmental quality, outbreak of diseases, unemployment, to mention but few, will be greatly reduced.

2.1.2 Housing type

The type of housing provided in an area gives us an idea of what the area is like. Below are the types of housing we can see around based on construction style.

2.1.2.1 Bungalows

This is a common house type in Nigeria and it describes a building on a single level or storey. That is, a one-storey building. Usually it comprises a sitting room (or reception) bedrooms, kitchen, store, bathrooms and toilets all arranged on the same level.

2.1.2.2 Detached bungalow

This bungalow exists on a separate plot of land on its own without any other structure built on its side. Oftentimes this type of bungalow will have its own nature have their own separate fence (demarcating it from other neighbouring houses) and its own single access gate.

2.1.2.3 Semi-detached/ duplex bungalows

This contains two (twin) units built side by side on the same plot of land. Some twin bungalows are also constructed as separate buildings, placed side by side on the same plot, sometimes with a low fence wall separating them for privacy, and separate entrance gates. Others share a roof as one building but are two "houses" with a common wall (a common party wall) separating them.

2.1.2.4 Storey building

A block of flats is a single building designed and built to house several units of accommodation under the same roof, each existing side by side or arranged on top of one another with common access or 'gray areas' and having separate and defined access to each flat exclusive of the others. They usually comprise two or more floors.

2.1.2.5 Tenement buildings (Rooming Houses)

These are old-type designs that are usually found in high-density areas and contain rooms built under one roof with a common corridor running through the house from the front to the back into which all the rooms open. Therefore, there is a front entrance leading to the long common corridor and this ultimately ends in a back entrance where all the commonly shared conveniences: are general kitchen, bathroom(s), and toilet(s). They are often multi-tenanted with each family renting between two or three bedrooms in the whole building, which could contain anything between six and twenty-four rooms or more. In local parlance they are called "Face- me- I- face-you". As usual, they could be on a single floor in which case they are tenement bungalows or on two floors (two storey) or three floors (three storeys).

2.1.2.6 Traditional buildings

These are the traditional house types and are mainly occupied by members of the same linkage. The traditional compound building generally has an open courtyard, which is utilized for domestic, economic and social activities.

Jinadu (2007) further classified housing types as follows:

(1) **Housing types based on location or setting**:- These are two basic types of housing based on the location of the units. These include rural and urban housing.

(i) **Rural housing**:- These are houses located in the rural areas and they are usually characterized by simplicity of design, structure and use of local building materials such as mud, raffia palm, bamboo and wood. In the context of most developing countries, rural houses are characterized by absence or inadequacy of basic services such as internal pipe borne water and sanitary facilities.

(ii) **Urban housing**:- These are houses located in urban areas. The houses are, in most cases, characterized by modern design and the use of modern building materials. Urban houses are often

serviced by infrastructure and serviced by infrastructure and services such as roads, pipe-borne water, electricity etc. However, elements of inadequate services, simplicity of structure and materials may be found as in the case of old houses in the city core areas and in the informal housing on urban marginal lands.

(2) **Housing types based on ownership structure**:-

(i) **Private housing**:- These are houses owned and managed by private individuals in the society. They are characterized by great variability in structural design and the ancillary services provided within and outside the house depending on the taste, preference and the economic buoyancy of the owner. Private houses form the bulk of the housing stock in most economies.

(ii) **Public housing**:- These are houses constructed and owned by public outfits such as the government and its agencies. Public houses are characterized by uniformity of design and ancillary services. Examples of public housing are the different government residential estates and official quarters located in towns and cities.

(iii) **Co-operative housing:-** These are houses owned and managed by cooperative societies. They are products of private cooperative efforts. Here, all tenants form a corporation. Each tenant owns the right to occupy his apartment by virtue of having bought shares in the corporation and by paying his share of charges for building maintenance, service and repairs.

(iv) **Community housing**:- These are houses owned and managed by community. Examples of such houses include community town halls and guest inns. Such housing may be constructed through community effort or built by community-based organizations (CBOs) such as town unions. lex

(v) **Condominium housing**:- A Condominium is a complex of dwelling units in which the individual actually owns and holds title to his apartment and accepts sole financial responsibility for the house. Owners in a Condominium building have joint interest in shared property and bear maintenance cost of public facilities in the building such as hall way, elevators, incinerators, common lawns etc. A Condominium complex may consist of a single building or a group of buildings and surrounding properties.

2.1.3 Infrastructure

The oxford advanced learner dictionary defines infrastructure as the basic systems and services that are necessary for a country or an organization for example buildings, transport, water and power supply and administrative systems.

Onokerhoraye (1984) identified infrastructure as " a service in which the various levels of government in the country as well as the various communities are collectively involved in its provision" He went further to state that it also includes the services provided by voluntary agencies and private individuals for the benefit of the community at large.

Infrastructure has been described to include the aggregate of all facilities that enable a society to function effectively. By providing the physical facilities, which move people, goods, commodities, water, waste, energy and information, infrastructure provides an enabling environment for economic growth and enhanced quality of life. Infrastructure is therefore universally regarded as the engine that drives the city. The linkages between economic activity and infrastructure continue to grow stronger and more critical as economic activity becomes increasingly more complicated and global in scope, (Babawale, 2004)

William Morish and Catherine Brown (n.d.), as quoted in Akujuru (2004), described infrastructure, as "the systematic framework which underpins a community's ability to fulfill its mission of providing a base for its citizens to be productive and to nurture social equity. Omuojine (1997), as also quoted in Akujuru(2004), described it as the stock of fixed capital assets in a country for example roads, railways, airports, hospitals, water ways, power stations, water works, and telecommunication network. It serves as a slender threads that weaves together human needs and values with those of the environment. Literally, it refers to fixed facilities or installations traditionally provided by the public sector. Omuojine (ibid), classifies it as follows:

1. Transportation, including roads, railways, airways, airports, seaports and waterways;
2. Water supply including water works and dams,
3. Electricity including power stations,
4. Telecommunications including postal, telephone, telex,
5. Health including hospitals, maternity homes and health centers,
6. Sanitation and solid waste disposal
7. Drainage and embankments.

2.1.4 Environment

The environment can be seen as the sum total of influence, which modifies and determines the development of life and character. According to Aina (n. d), the "Human environment encompasses the physical entity and the resources of the planet earth outside man supporting the existence of living and inanimate resources on the surface and atmosphere of the earth", (Udia, 2003)

Environment is also a multi-disciplinary science, including medicine, to protect human health. A good and healthy environment should be efficient and aesthetically pleasing for easy working, circulation and recreation by the people concerned. It should contain healthy and good breathing air, water supply, good quality potable drinking water, land use pattern effectively and efficiently laid out aesthetically, transportation and communication systems and other things needed by man in his environment, (Osoko, 2006).

2.1.5 Housing Standard/ Housing Adequacy

Onibokun (1982), defines adequate housing more broadly than having a roof over one's head. Adequate housing to him implies protection from the elements, hygiene, and disposal of household and human waste, sufficient space for health and privacy, security of tenure of occupancy, availability of

safe drinking water, affordability and access to employment, health, recreation and educational service. He went further to say that housing is adequate when there is the provision of facilities, transportation, water, employment and other means of livelihood for without financial means, housing will remain unaffordable for the unemployed and the poor. There are strong linkages between housing and water, sanitation, health, work and learning. Adequate housing was further expanded by Korede (1993), in Ajala (2002), as an essential pre-requisite for good health, while poor housing is a contributor to low physical and mental efficiency and its relation to prevalence of disease is easy to recognize. Adequate housing depends on housing design that is the planning and working out of the housing environment in the most creative manner to ensure an efficient relationship within it and other land uses in the urban area. Onibokun (ibid), has opined that, Nigeria has reached a stage of development where the standard of home design should be able to keep pace with other developed countries. He stressed further that decent housing can be regarded as the right of every individual and that a great proportion of the population of Nigerians live in sub-standard, poor housing and in the deplorable, unsanitary residential environment.

Onokerhoraye (ibid), threw more light by classifying standards in Nigeria into two; space standard, which defines intensity development in terms of plot size, and occupancy, sizes. The second relates to performance standard describing the quality of environment that is quality of construction, types of materials to be used and quality of services to be offered, while building bye-laws, codes and regulation prescribe these in respect of water, fire, noise, waste and industrial effluent.

2.2 LITERATURE REVIEW

A study in the evaluation of housing qualities is a new dimension research in the field of environmental management. This is because, the majority of previous research in the field of environmental management reflects mainly on central issues, such as waste management, environmental pollution and degradation, flooding and so on. Therefore, there is need for housing researchers and environmental researchers to work hand in hand in order to be able to achieve a common goal (i.e. a harmonized environment) because housing is one of the components of an environment.

Morenikeji (2000), examined the environmental quality and rental values of the residential properties in Ibadan. In his statement of the problem, the following questions were set for the research; what environmental

parameters are to be used to measure environmental qualities of neighbourhoods in Ibadan? What influence do these environmental properties have on rent attracted by residential properties in various neighbourhoods? What areas constituted residential neighbourhoods in the town? What are the residential property types?

In an attempt to answer the questions, a structured questionnaire was administered which asked twelve questions in all such as types of buildings, rental values, access to building, condition of access, mode of payment (annually), age of the building, toilet facilities, drainage system, sources of water, waste disposal, waste storage and parking facilities. Data were analyzed and regression equation was used. Findings show the various building types and based on the regression analysis, the environmental quality was found to have significant influence on rental values of residential properties.

Ajala (2002), in his appraisal of housing conditions and infrastructural facilities in Maikunkele Housing Estate, Minna, identified types of housing units and determined the occupancy ratio within the estate. Data were collected on housing survey, housing infrastructural facilities, and environmental survey (streetlight, drainage). Data were analyzed through the use of tables, simple percentage, pie chart, cumulative frequency curves and

bar chart. Pearson chi-square was also used in carrying out data analysis. It was found that, facilities provided in the estate are inadequate and there was no proper management and that, there is a statistically significant relationship between the occupancy ratio and the housing condition.

In a research conducted by Richard (2001), two problem questions were asked, vis: (i) what changes have occurred with the social structure of sub-urban Brisbane during the period 1976 to 1996? (ii) What is the relationship between social constructs and established residential housing values? Data were collected on (1) Social-economic status (measured by income, education, occupational type); (2) Family status (measured by age, household type, marital status etc.); (3) Ethnic status (measured by country of birth, other languages spoken etc). Two-stage approach was adopted in analyzing established house sale prices and demographic data in Brisbane. For the first question a principal components analysis (P. C. A.) was conducted identifying social dimensions from five censuses conducted in Brisbane between 1976 and 1996 (inclusive). To address the second question a Multiple Regression Analysis (M. R .A.) was undertaken and regressed the factor scores from the PCA (as independent variables) against established residential house prices (dependent variable). The analysis was restricted to sales of established residential houses and limited to improved properties

with total land area not exceeding $2000m^2$ located in suburban Brisbane. Finding shows that social construct or social structure of suburban Brisbane has been in a continual state of change in response to variations in household composition and society. He demonstrated that a relationship exists between established house values and social construct or dimension. It is obvious that no data were collected to examine the quality of the established residential houses.

Ojetunde and Morenikeji (2006), measured residential quality as well as resident's perception of quality in minna. Data were collected on property information (such as rental, utilities, facilities and location) to determine the trends in property value. In addition, mean rental values of residential properties in the selected neighbourhoods were collected from residents using four variables of perception as follows: (i) Housing condition (Estate). (ii) Housing infrastructure. (iii) The adequacy of the house. (iv) The provision of physical infrastructure (in terms of sanitation, roads, water and power supply). Each of these variables was ranked from Good, Moderate, Bad, Very bad and Worst. A good residential quality weighed 5 points, Moderate was 4 points, Bad residential quality was 3 points, Very bad was 2 points and a residential of Worse quality was 1 point. However, a consensus

opinion for all the neighbourhoods was arrived at by compose index as follows;

1.0 – 1.50 = Worse

1.51 – 2.49 = Very bad

2.50 – 3.49 = Bad

3.50 – 4.49 = Moderate

> 4.50 = Good

The consensus or general opinion of residents in all the 15 neighbourhoods sampled was that the quality of their residential neighbourhoods was BAD. Regression analysis was used by regressing the mean sum of residential quality against the respective mean rental value of each neighbourhood. Finding showed that there was a strong correlation between mean rental value and residential quality scores. This research lacks adequate questions to determine the quality of housing. In quick response to this gap above, Ojigi and Kemiki (2007), aimed to establish the relationship between building quality and rental value in Bosso Estate, Minna, using GIS analytical technique in real estate. Detailed property information was collected in assessing the building qualities. 30 factors were considered and

ranked to determine the quality. These included condition of doors, windows, floors, roof, and access to water among others. Rental values were obtained directly from the respective tenants and property owners. The correlation statistics between building quality and rental value within the study area was conducted using Pearson Product Moment Correlation method.

The mean value of the building quality factors for each of the sampled building were correlated with their corresponding rental value. There was nothing said about the quality of the environment in which the buildings were located. According to Uyanga (1998), "Urban environments are very complex network characterized by high concentration of people. The positive effects of these concentrations on the quality of life are often overshadowed by major environmental problems such as development of slum, urban poor etc. The rapid growth of population and concentration in urban areas of developing world has led to the rapid deterioration of the human environment caused by the increasing gap between economic growth on one hand and population growth and concentration on the other.

Onibokun and Kumuyi (2004), were quoted by Garba et.al. (2007), to have said, "The problems and challenges posed by this rapid urban growth are immense. Very frightening and perhaps more easily observable are the

human and environmental poverty, declining the quality of life, and untapped wealth of human resource that they represent. Housing and associated facilities (water, electricity etc.) are similarly inadequate, such that millions now live in substandard and sub-human environments, plague by slums, squalor, and similarly inadequate social amenities such as schools, health recreational facilities".

Urban development plan and planning regulations as implemented in many developing countries had seems to fail to provide orderly and sustainable urban developments. These have resulted in development of squatters' settlement and slum, which have continued to dominate the urban centers of developing countries in spite of officially approved urban development plan. Land use planning or physical planning is one of the integral parts of city planning process. Physical planning is a continuous programme of driving, organizing and presenting a comprehensive plan for the development and or renewal of the city. Jagun (1983), affirms that 75% of the dwelling units in Nigeria's urban centers are substandard and the dwellings are sited in slums. The quality of the environment in most urban centers in Nigeria is deplorable. This is not so much dependent on the material characteristics of the buildings (Mabogunje, 1980) but on their organization as spatial units. The slow process of urban development, in the face of rapid rate of

urbanization in most urban centers of Nigeria, has resulted in poor and in most cases distorted layout of buildings with inadequate roads between them and inadequate drainage and provision for refuse disposal and evacuation. Thus, there is a high incidence of pollution (water, solid waste, air and noise) and inadequacy of open spaces for other land uses (Garba, et.al ibid)

The indoor environment of the urban poor presents an unacceptable standard for human habitation. Some of the striking features are small room apartments with substandard doors, poor ventilation due to the use of small and substandard windows, lack of planned and undersigned buildings owing to inability of building owners to hire the services of professional architects, poorly finished floor, walls and ceilings of buildings thereby exposing the occupants to unclean and untidy environment, sometimes only few or no convenience facilities are located within the buildings and are characterized with inadequate provision of water and sanitation. The situation of slums and squatter settlements in the urban environment of Nigeria presents a worrisome picture, as many people do not have access to sanitation facilities. There are no drainage facilities and even where there are, they are susceptible to blockages owing to haphazard construction of buildings.

The general outdoor environment is littered with solid waste depots, unkempt surroundings of buildings and noise pollution. It is equally

noticeable that since there are no sanitation facilities, the people defecate along local streams and drainages and sometimes use open spaces, bush paths, dilapidated and abandoned buildings as sites for such unwanted activities (Ejiga, et.al.).

Authors have however said that, all houses are shelters but not all shelters are houses. For a shelter to be called a house, it must fulfill the needs and aspirations of the users. A good house should have a maximum of a quiet environment, living and out- door space, privacy, cleanliness, safety and aesthetic satisfaction. It must also be built of good quality materials and be served with basic community facilities such as roads, water, electricity, sewage/refuse disposal and recreational facilities. It must meet the need and aspirations of the residents as well as contribute to physical, mental and social well- being of the people. Accordingly, every house, irrespective of its type, performs certain similar basic universal functions. However, the level of performance of housing function may differ, depending on the type of housing, level of services offered and the requirements of the users.

However, according to Jinadu(2007), studies and real life experiences have shown that majority of the low-income earners in the developing world live in substandard housing and poor quality neighbourhoods. There are two dimensions to the problem poor housing quality. First, most of the units in

the core areas of our traditional cities are consistently growing old with little or no maintenance. Second, the problems of low-income and poverty of the majority have resulted in the construction of substandard housing and the creation of low quality neighbourhoods, which are deficient in basic services.

2.2.1 State of Infrastructure in Nigeria

The state of infrastructure in Nigeria has remained a matter of concern given the importance of infrastructure in the economic well being of the populace and the growth and development process of the economy. It seems a well-known fact that infrastructural facilities in this country are grossly inadequate to meet the needs of industries both old and new and the population. Oke (1999) as quoted in Ogunyomi (2006), observed that existing industries have to provide their own water by digging boreholes, generate their own power through the provision of stand-by generators for electricity supply. For new investments, project cost has to include the cost of providing these utilities in the new factory site. Furthermore, some urban and most rural roads are in a state of disrepair and in consequence, not motorable. He revealed that Nigeria looses about N80 billion annually due to bad roads. Where some of these infrastructure facilities are available, they are epileptic in terms of performance therefore not reliable.

CHAPTER THREE

MATERIALS AND METHODS

3.1 Introduction

This research work was carried out through secondary and primary data. Extensive reviews of past researches were done in order to know the existing body of knowledge in this field of study and all the authors have been acknowledged accordingly. Other data were primary type of data obtained from the field.

3.2 Sources of Data Collection

Data for housing research are obtainable from diverse sources depending on the type and nature of the research. These sources are generally classified into the primary and the secondary sources:

3.2.1 Primary Sources of Data

Due to the fact that primary source of data collection gives a first hand and better information, the researcher relied on it in the course of data collection for the study. Primary data for this research were collected through a well-structured questionnaire, oral/personal interview, personal observation, and photographs to capture features.

3.2.1.1 Structured questionnaire

Questionnaires methods were used where question related to the subject matter of study structured on paper and administer to various households, which elicited most of the information used for this study. Goode and Hatt (1952), as quoted by Morenikeji (2006) had described a questionnaire as a device for securing answers to questions by using a form, which the respondent fills himself. A standardized questionnaire is one in which the arrangement of questions and their wordings are fixed which give the interviewer no choice other than to follow it strictly.

3.2.1.2 Questionnaire design for the study

A questionnaire was drafted for this research and was administered in the study area. The questionnaire focused on the socio-economic survey and housing survey of the respondents that involves age, sex, marital status & type of building, accessibility etc. The questions drafted were for achieving the aim and objectives set out for the study.

Table 2: Distribution of Questionnaires and Percentage of Responses

Zones	Number Of Questionnaire Administered	Number Of Questionnaire Returned	Percentage Of Questionnaire Returned
Traditional residence	100	49	49.0
Non-traditional residence	100	56	56.0
Total	200	105	52.5%

Source:- Author's Field Survey, (2008)

Two hundred questionnaires were administered in the study area as shown in Table 2. Out of 200 questionnaires distributed, only 105 questionnaires were completed and returned, representing 52.5% of the questionnaire distributed. This low response rate may be attributed to the level of illiteracy in the study area. People are sensitive to Abuja experience of demolition of houses. Nevertheless, from statistical point of view this percentage is still considered valid for representation.

3.2.1.3 Oral/ personal interview

Oral interview is very useful and relevant because most of the respondents prefer answering verbally instead of writing. This method was adopted with the questionnaire distribution. It allowed verbal opinion to be made, which served as a backup for questions raised on the questionnaire and those that could not be asked in the questionnaire. It also made allowance for the opinion of the illiterates and semi-educated people.

3.2.1.4 Personal observation

This is necessary by knowing the area of study for the research. Make an observation that entails thorough study of the area in question. It enhances confidence of the researcher in the quality of data collected. Personal observations of the concerned area-housing infrastructure were also made and recorded in form of photographs.

3.2.1.5 Photograph

As part of primary data collection, photograph of some houses and neighbourhood infrastructure found in the study area were taken. This is to show the existing situation of the area in focus. These include house types, roads, water sources, waste disposal etc. The photographs can be found in chapter four.

3.3 Secondary Sources of Data

In the case of secondary sources, data have already been collected by individuals, appropriate agencies or organizations and recorded in a particular format as desired by the agencies or organizations, bearing in mind, to certain extent, the needs of the prospective users of the data. Certain information were sourced from different materials such as textbooks, magazines, journals, conference papers, unpublished projects that deal with

issues related to this research especially for literature review. All the used materials are well acknowledged at the reference page.

3.4 Sampling Size and Techniques

The sampling technique used for this research is stratified random sampling. Samples were drawn from two major zones, i.e. zone of traditional residence and zone of non-traditional residence. The housing population of the city was not known. As a result, the population sampled could be said to be non-probability sampling. Due to homogenous nature of traditional residence, the systematization had been each house in every five houses, while various type of residential houses were sampled from the non-traditional residence, 200 questionnaires were distributed in both zones.

3.5 Methods of Data Analysis

Data analysis involves extraction of data from information sourcing instruments such as questionnaires, interview etc. The data collected for this thesis through various sources as previously mentioned had been analyzed by statistical package for social science (SPSS) software (regression analysis). It is also presented in tables, frequency distributions and pictures.

CHAPTER FOUR

RESULTS

4.1 INTRODUCTION

The primary aim of this thesis is to assess the housing quality in relation to environmental quality in Abaji city, and to use the data as a yardstick for future development of the area. This chapter focuses on presentation of data and test of hypotheses formulated in chapter one. Some statistical tools were used to test the hypothesis.

4.2 Housing Survey of Abaji City

Table 3: Housing Types in Abaji City

		Frequency	Percent	Valid Percent	Cumulative Percent
	bungalow	34	31.2	32.4	32.4
	semi-detached	13	11.9	12.4	44.8
	storey building	4	3.7	3.8	48.6
	traditional compound	38	34.9	36.2	84.8
	rooming (face to face)	16	14.7	15.2	100.0
	Total	105	96.3	100.0	
Total		105.00	100.0		

Source: - Author's Field Survey, (2008)

Table 3 above gives the percentages of housing types in Abaji City, Federal Capital Territory, Nigeria.

Fig. 3: Map of the Study area, showing different types of buildings

Plate I: Typical Traditional Compound at Abaji City, Nigeria.

Plate II: Typical Bungalow House at Abaji City, Nigeria.

Plate III: Typical Semi-detached House at Abaji City, Nigeria.

Plate IV: Typical Rooming (face- to- face) House at Abaji City, Nigeria.

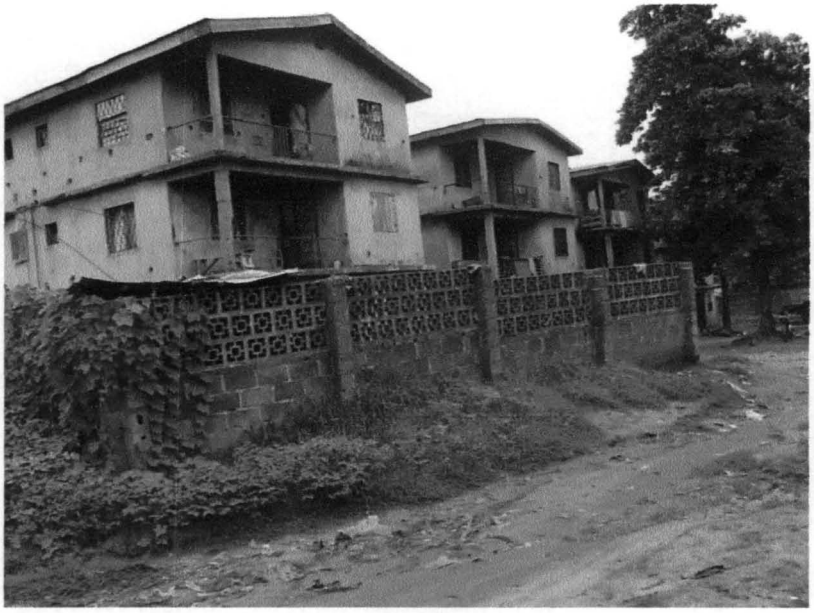

Plate V: Typical Storey House at Abaji City, Nigeria.

4.2 Housing Quality Measured

This is assessed by the house structural characteristics in –house and environmental facilities. Each of these variables was assigned values. The higher the quality, the higher the score awarded e.g. Bungalow was assigned 5, Semi-detached was assigned 4, Storey building was assigned 3, Traditional compound was assigned 2, Rooming (face to face) was assigned 1. Detailed property information was collected in assessing the building qualities. 31 factors were considered and ranked to determine the quality. These included condition of doors, windows, floors, roof, and access to water among others. Rental values were obtained directly from the

respective tenants and property owners. See appendix I. The mean housing quality of each house sampled was arrived at after scoring the variables.

Based on the mean housing quality arrived at, the highest mean quality is 3.42 and the least is 1.66. See appendix II. Based on these figures, we can then categorize the quality of the houses as follows;

(i) Less than 1.99 = Extremely poor
(ii) 2.00 – 2.40 = Very poor
(iii) 2.41 – 2.80 = Poor
(iv) 2.81 - 3.20 = Fair
(v) 3.21 and above = Good

From this cut-off, the housing type qualities for both zones were given in Table 4 below:

Table 4: Housing Quality based on the compositing above.

Zones	Housing Quality Measured					
	Good	Fair	Poor	Very poor	Extremely poor	Total
Traditional residence	2	4	22	15	6	49
Non-traditional residence	23	24	9	-	-	56
Total	25	28	31	15	6	105
Percentage %	23.8%	26.7%	29.5%	14.3%	5.7%	100%

Source; Author's Field survey, (2008)

The Table 4 above revealed the percentages of housing quality of Abaji City after compositing.

4.3 Infrastructural Facilities Available at Abaji City

Table 5: Sources of water supply available at Abaji City

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	well	2	1.8	1.9	1.9
	water tanker	25	22.9	23.8	25.7
	stream/river	28	25.7	26.7	52.4
	pipe borne water	4	3.7	3.8	56.2
	water hawkers (mairuwa)	41	37.6	39.0	95.2
	borehole dug in the house	5	4.6	4.8	100.0
	Total	105	96.3	100.0	
Missing	System	4	3.7		
Total		109	100.0		

Source: - Author's Field Survey, (2008)

The responses on the sources of water supply available in the study area are presented in percentages in the above Table 5.

Plate VI: Water tanker fetching water from a river at Abaji City, Nigeria

Plate VII: Stream water supply at Abaji City, Nigeria

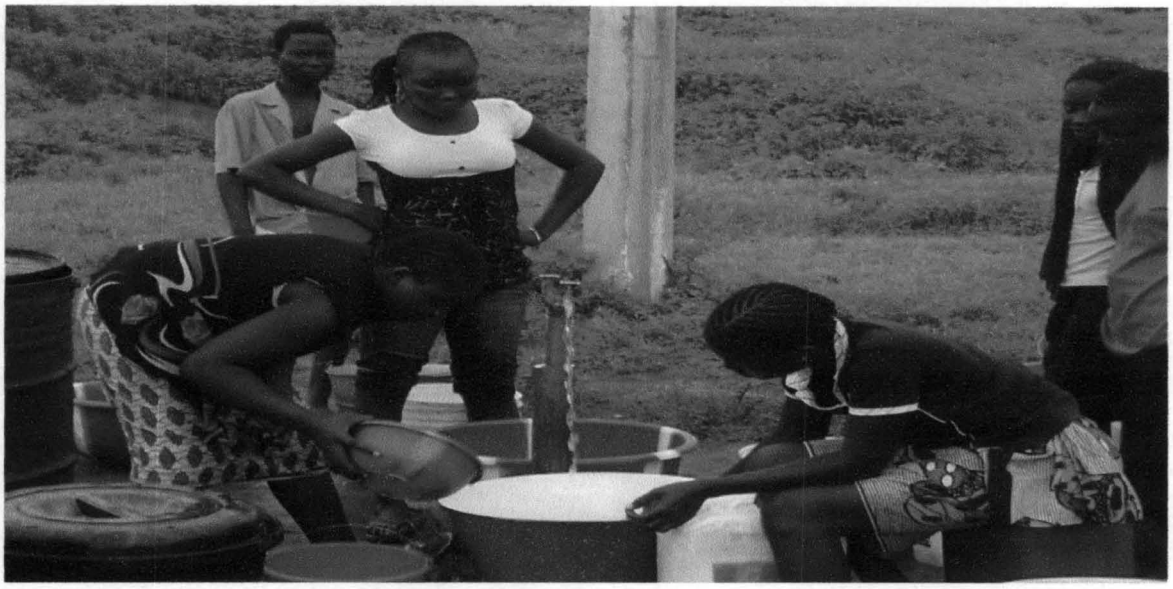

Plate VIII: Pipe borne water supply in neighbourhood of Abaji City, Nigeria

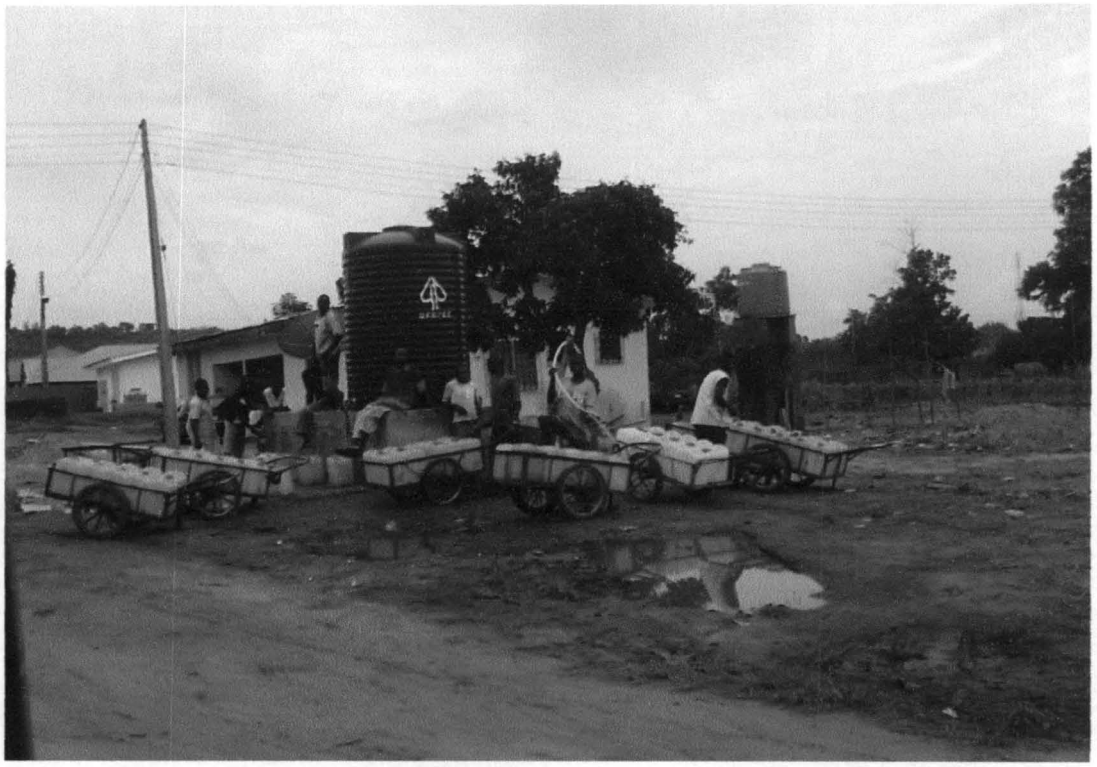

Plate IX: "Mairuwa" (water vendors) waiting to fetch water for sell at Abaji City in a private borehole

Plate X: "Mairuwa" (water vendors) waiting to fetch water for sell at Abaji City in another borehole

Plate XI: Motorized borehole constructed by Abaji Area Council in the neighbourhood

Table 6: Road infrastructure at Abaji City

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	footpath	17	15.6	16.7	16.7
	tarred road	45	41.3	44.1	60.8
	un-tarred road	38	34.9	37.3	98.0
	tar washed off	2	1.8	2.0	100.0
	Total	102	93.6	100.0	
Missing	System	7	6.4		
Total		109	100.0		

Source: - Author's Field Survey, (2008)

The Table 6 above presents the percentages of responses for accessibility infrastructure at Abaji City.

Plate XII: Tarred road within Abaji City neighbourhood

Plate XIII: Un-tarred road within Abaji City neighbourhood.

Plate XIV: Tar washed off road within Abaji City neighbourhood.

Table 7: Waste disposal method at Abaji City

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	open space	92	84.4	87.6	87.6
	collected by agent	13	11.9	12.4	100.0
	Total	105	96.3	100.0	
Missing	System	4	3.7		
Total		109	100.0		

Source: - Author's Field Survey, (2008)

Table 7 above revealed the percentages of the responses for the waste disposal methods at Abaji City, Federal Capital Territory Nigeria.

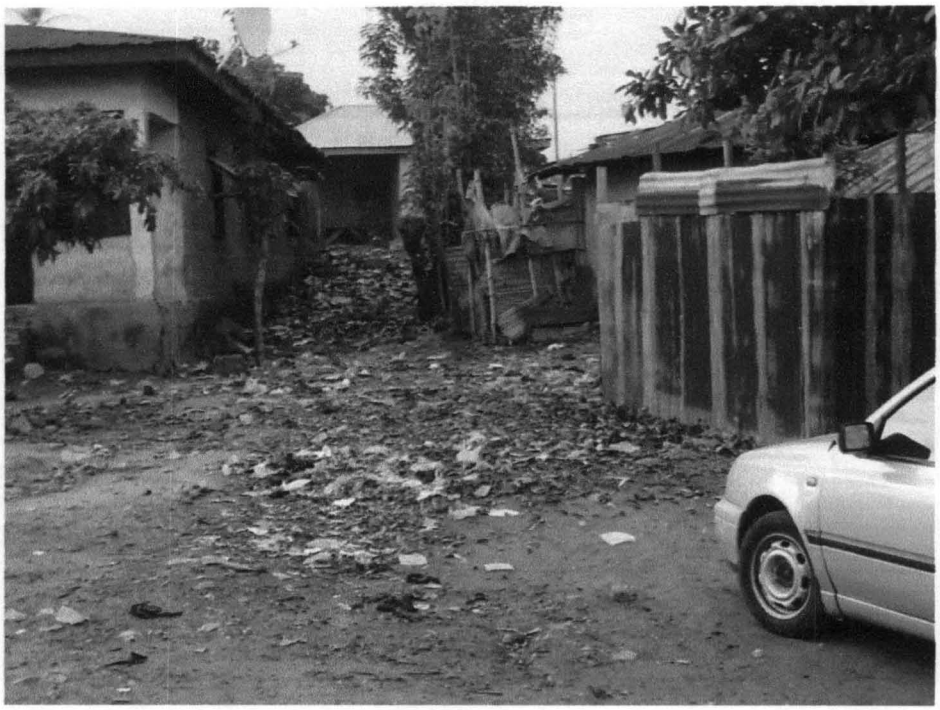

Plate XV: dumping of refuse in the neighbourhood at Abaji City, Nigeria

Plate XVI: dumping of refuse in the open space at Abaji City, Nigeria

4.4 Hypotheses Testing

For clarity, the following simple notations shall be used.

$\mathbf{H_0}$: Null hypothesis

$\mathbf{H_1}$: Alternative hypothesis

4.4.1 Decision rule

The common practice among researchers is to set the level of significance at 0.05, or 0.01 or 0.10.

4.4.2 The critical value of the test statistic

This value is very vital in test of hypothesis. It is defined as 'the value that is so extreme that the probability of getting it or a more extreme value, when H_O is true, is equal to- ; (where - is given as either 0.05, or 0.01 or 0.10 or such other value that the researcher may choose).

4.4.3 Method of P-Values

Another way to test null hypotheses is to determine the probability of getting a test statistic, which is close to the statistic actually calculated or observed. The probability is often referred to as the critical level or the P-Value.

Some statistical tables are constructed to enable users read off the P-Values. A statistical package known as statistical package for social science (SPSS) is programmed to give P-Values as well as the calculated statistics.

4.4.4 Hypothesis and Test of Correlation between Building Types and Rental Values

Hypothesis: 1

$H_{0:}$ There is no significant relationship between building type and rental value.

H_{1}: There is significant relationship between building type and rental value.

Table 8: Correlation between Building Types and Rental Value

		ANUARENT	BLDTYPE
ANUARENT	Pearson Correlation	1.000	-.364**
	P-VALUE	.	.007
	N	54	54
BLDTYPE	Pearson Correlation	-.364**	1.000
	P-VALUE	.007	.
	N	54	105

**. Correlation is significant at the 0.01 level (2-tailed).

Source: - Author's Field Survey, (2008)

Table 8 above revealed the significant relationship between building types and annual rental value.

4.4.5 Hypothesis and Test of Correlation between Accessibility and Rental Value

Hypothesis: 2

H_0: There is no significant relationship between accessibility (road network) and rental value.

H_1: There is significant relationship between accessibility (road network) and rental value.

Table 9: Correlation between Accessibility and Rental Value

		ANUARENT	ACCESSIB
ANUARENT	Pearson Correlation	1.000	.284*
	P-VALUE	.	.042
	N	54	52
ACCESSIB	Pearson Correlation	.284*	1.000
	P-VALUE	.042	.
	N	52	102

*. Correlation is significant at the 0.05 level (2-tailed).

Source: - Author's Field Survey, (2008)

The Table 9 above revealed the significant relationship between accessibility and annual rental value.

4.4.6 Compare Mean of Infrastructural Facilities

Hypothesis: 3

H_0: There is no significant difference in infrastructural facilities available in the two selected zones of the city.

H_1: There is significant difference in infrastructural facilities available in the two selected zones of the city.

NOTE: The full meaning of the variables in the compare mean table 10 are given below,

POWERSUP – Power supply

WATERSOUC – Water sources

WATSPEND – Water expenses

WASTDISP – Waste disposal

Table 10: Compare Mean of Infrastructural Facilities

	N	Mean	Std. Deviation	Std. Error Mean
POWERSUP	105	2.9524	.3768	3.677E-02

	Test Value = 0					
					95% Confidence Interval of the Difference	
	t	df	Sig. (2-tailed)	Mean Difference	Lower	Upper
POWERSUP	80.299	104	.000	2.9524	2.8795	3.0253

	Test Value = 0					
					95% Confidence Interval of the Difference	
	t	df	Sig. (2-tailed)	Mean Difference	Lower	Upper
WATSOURC	27.467	104	.000	3.6857	3.4196	3.9518

	Test Value = 0					
					95% Confidence Interval of the Difference	
	t	df	P-VALUE	Mean Difference	Lower	Upper
WATSPEND	15.987	91	.000	1.8587	1.6278	2.0896

	N	Mean	Std. Deviation	Std. Error Mean
WASTDISP	105	1.1238	.3309	3.230E-02

	Test Value = 0					
					95% Confidence Interval of the Difference	
	t	df	Sig. (2-tailed)	Mean Difference	Lower	Upper
WASTDISP	34.796	104	.000	1.1238	1.0598	1.1879

Source: - Author's Field Survey, (2008)

Table 10 above revealed the compared mean of infrastructure facilities of Abaji City, Federal Capital Territory, Nigeria.

4.4.7 Hypothesis and Comparison Testing of Quality of House Materials

Hypothesis: 4

H_0: There is no significant difference in the quality of materials used for houses, condition of the building items in Abaji city. (Wall, floor, window and ceiling).

H_1: There is significant difference in the quality of materials used for houses, condition of the building items in Abaji city. (Wall, floor, window and ceiling).

NOTE: The full meaning of the variables in the ANOVA table 11 / ANOVA table 12 are given below respectively,

WALLMAT – Wall materials / WALLCOND – Wall condition

ROOFMAT – Roof materials / ROOFCOND – Roof condition

FLOORMAT – Floor materials / FLOORCOND – Floor condition

WINDMAT – Window materials / WINDCOND – Window condition

DOORMAT – Door materials / DOORCOND – Door condition

CEILMAT – Ceiling materials / CEILCOND – Ceiling condition

Table 11: ANOVA for the Quality of Materials Used

		Sum of Squares	df	Mean Square	F	p-value\
WALLMAT	Between Groups	3.694	3	1.231	.720	.545
	Within Groups	83.777	49	1.710		
	Total	87.472	52			
ROOFMAT	Between Groups	.839	3	.280	.383	.765
	Within Groups	36.494	50	.730		
	Total	37.333	53			
FLOORMAT	Between Groups	16.762	3	5.587	5.524	.002
	Within Groups	50.571	50	1.011		
	Total	67.333	53			
WINDMAT	Between Groups	3.910	3	1.303	.458	.713
	Within Groups	139.298	49	2.843		
	Total	143.208	52			
DOORMAT	Between Groups	9.548	3	3.183	1.899	.142
	Within Groups	83.786	50	1.676		
	Total	93.333	53			
CEILMAT	Between Groups	3.207	3	1.069	.712	.549
	Within Groups	73.548	49	1.501		
	Total	76.755	52			

Source: - Author's Field Survey, (2008)

Table 11 revealed the relationship between F-cal and the P-value of the quality of materials used for buildings in Abaji City.

4.4.8 Hypothesis and Comparison Testing of Condition of Building Items

Ho: There is no significant difference in the condition of the building items.

H_1: There is significant difference in the condition of the building items.

Table 12: ANOVA for Condition of Building Items

		Sum of Squares	df	Mean Square	F	Sig.
WALLCOND	Between Groups	3.751	3	1.250	1.310	.282
	Within Groups	46.777	49	.955		
	Total	50.528	52			
ROOFCOND	Between Groups	11.779	3	3.926	1.447	.241
	Within Groups	132.976	49	2.714		
	Total	144.755	52			
FLORCOND	Between Groups	3.419	3	1.140	1.119	.351
	Within Groups	47.875	47	1.019		
	Total	51.294	50			
WINDCOND	Between Groups	4.419	3	1.473	2.907	.044
	Within Groups	24.826	49	.507		
	Total	29.245	52			
DOORCOND	Between Groups	1.899	3	.633	1.411	.251
	Within Groups	21.988	49	.449		
	Total	23.887	52			
CEILCOND	Between Groups	.857	3	.286	.371	.774
	Within Groups	38.476	50	.770		
	Total	39.333	53			

Source: - Author's Field Survey, (2008)

Table 12 revealed the relationship between F-cal and the P-value of the condition of building items in Abaji City.

4.4.9 Correlation Measures

Ho: There is no relationship between building age and roofing condition.

H_1: There is relationship between building age and roofing condition

Table 13: Correlation between Building Age and Roof Condition

		BLDAGE	ROOFCOND
BLDAGE	Pearson Correlation	1.000	-.616**
	Sig. (2-tailed)	.	.000
	N	105	103
ROOFCOND	Pearson Correlation	-.616**	1.000
	Sig. (2-tailed)	.000	.
	N	103	103

**. Correlation is significant at the 0.01 level (2-tailed).

Source: - Author's Field Survey, (2008)

The Table 13 revealed the correlation between building age and roofing condition in Abaji City.

CHAPTER FIVE

DISCUSSION, CONCLUSION AND RECOMMENDATIONS

5.1 DISCUSSION

The result from analysis in the previous chapter from Table 3 shows that traditional compound and bungalows dominate Abaji City, which together contributed about 68.6% of the total stock houses. Others such as semi-detached, storey building and rooming houses (Face -to- face) only contributed about 31.4%. The housing quality depends on housing components and infrastructure facilities available in the neighbourhood. In this case, 23.8% represent houses with good quality, 26.7% represent fair, 29.5% represent poor, 14.3% represent very poor, and 5.7% represent extremely poor houses as indicated in the Table 4. Based on the result of analysis as shown in Table 11, we do not reject Ho since T-cal (1.1238) is less than upper critical T- value (1.1879) and greater than the lower critical T-value (1.0598). Hence, we conclude that there is no significant difference in power supply within the Traditional and Non-traditional area. In addition, the result of analysis on water source revealed that there is no significant

difference in the water source for residents of the Abaji City (See Plates VI, VII, VIII, and IX, X, XII.

More so, the result of analysis on expenses incurred on water does not reveal any significant difference in expenses incurred by the residents of the Abaji city. The results of analysis show that the method of waste disposal in the two zones of the city does not differ significantly and this can be observed in the Plates XIII & XV.

Table 8 shows the calculated correlation coefficient is less than the P-value; we reject Ho and accept H_1. It means there is significant relationship between building types and annual rental value. Correlation is significant at 0.01 levels. From this result, 36.4% variations in annual rental (ANUARENT) are predicted by building types (BLDTYPE). The correlation, which is negative, connotes that the building types determines the annual rental paid by the tenants.

It is not also different since the calculated correlation coefficient is less than the P-value; we reject Ho and accept H_1. It was discovered as shown in table 10 that 28.4% variations in annual rent (ANUARENT) are predicted by the accessibility (ACCESSIB) to houses in Abaji city. The correlation is significant at the 0.05 level. Table 11 shows the analysis for quality of

materials used and since F-cal is greater than the P-value, we do not reject Ho for wall material, floor material, door material and ceiling material. In contrary, we reject Ho for roof and window material since the F-cal is less than P-value. In addition, condition of building items was analyzed and since F-cal is greater than the P-value, we do not reject Ho for wall, window door and floor condition. Since F-cal is less than P-value, we reject Ho for ceiling condition and therefore accept H_1 (See Table 12).

From table 13, 61.6% variations in roofing condition are explained by building age. The correlation, which is negative, connotes that the age of building determines the roofing condition. The correlation is significant at the 0.01 level.

5.2 SUMMARY

Having analyzed the data, the following were deduced:

1. It was found that traditional compounds take the lead, followed by bungalow while rooming and semi-detached have almost the same frequencies or percentage. The least of the building type in the area is storey buildings (See Table 3).

2. It was found that, the infrastructural facilities available in the area are not adequate. This simply means that facilities such as power supply, water

supply, water source and waste disposal are indiscriminately available in the study area.

3. As one would expect, there exist a negative relationship between building age and roofing condition. The implication of the negative relationship is that as the building age increases, the roofing conditions are deteriorated the more.

4. It was discovered that there is no significant difference in qualities of materials such as wall material, floor material, and door and ceiling materials. However, there is a significant difference in the quality of window and roof materials used in the two zones of Abaji city.

5. It was also discovered that there is no significant difference in the condition of wall, window and floor. However, the ceiling condition reveals a significant difference.

6. It was also discovered that there exist a significant relationship between building type and rental value. The implication is that the building type determines the rental value (See Table 9).

7. It was discovered that there exist a positive relationship between accessibility and annual rental value. This simply implies that the more accessible a building the higher the rental value and vice-versa (See Table10).

5.3 CONCLUSION

Based on the findings stated earlier, the following conclusions were drawn:

That Abaji city originated from traditional settings. As traditional compound dominates the housing types in Abaji city. This is shown in figure 5.The-housing quality depends on housing components and infrastructure facilities available in the neighbourhood. In this case, Abaji city lacks good houses as indicated in the Table 5. There is lack of infrastructural facilities as depicted in the plates VI, VII, VIII, IX, XIII, XV, and XVI.

In addition, the building types determine the rental value of the house. In this case, the more decent a house is, the higher the rental value or the less decent a house is, the lower the rental value.

Road accessibility is also an important factor that determines the rental value. If a house is duly accessible in terms of road network, then the houses command higher rental value. As shown in table 10 that 28.4% variations in annual rent (ANUARENT) are predicted by the accessibility (ACCESSIB) to houses in Abaji city. The correlation is significant at the 0.05 level.

5.4 RECOMMENDATIONS

With due regard to the findings and conclusions of this research work, the following specific recommendations are made to Government and public authorities, city planners, developers and investors

(i) Government should provide a better road network in which virtually all the houses will gain accessibility. That is building regulations must be enforced by the appropriate officers of local authority.

In addition, there should be constant improvement on the infrastructural facilities to cater for population explosion in the nearest future.

(ii) Strictly, regulations should be formulated to ensure that materials used at various stages and for various components of the building are of good quality.

(iii) No doubt, there is an acute water problem in Abaji City. The present administration of Abaji Area Council should intensify her efforts in provision of more boreholes and embark on more water projects.

(iv) The present administration of Abaji Area Council should intensify her efforts in environmental education and sanitation in the city.

REFERENCES

Aboderin, F.J. (1975) Source of Housing Finance (direct and indirect). *A Paper Presented at 2nd International Conference on Housing at Conference Centre, University of Ibadan. Organized by The Association of Housing Corporations of Nigeria.*

Agbola, T. (2005) "The Housing Debacle". *Inaugural Lecture Delivered at the University of Ibadan, August, 2005.*

Ajala, E.E. (2002) An Appraisal of Housing Condition and Infrastructural Facilities in Maikunkele Housing Condition and Infrastructural Facilities in Maikunkele Housing Estate, Minna, Niger State. *B.TECH, Project Submitted to the Department of Estate Management, Federal University of Technology, Minna.*

Akujuru, V.A. (2004) Land Administration and Infrastructure Management for Urban Development. *A Paper Presented at the 34th annual Conference of Nigerian Institution of Estate Surveyors and Valuers.pp1-14*

Babawale, G.K. (2004) Sustainable Urban Infrastructure Delivery in Nigeria: The Role of the Private Sector and Community Based Organizations (CBOs). *34th Annual Conference Paper of the Nigerian Institution of Estate Surveyors and Valuers.pp41-49*

Ejiga, A.O. and Akubo, A.O. (2007) Poverty as an Impediment to Urban Development in Nigeria. *A Paper Presented at 1st Annual Conference, School of Environmental Technology, Federal University of Technology, Minna.pp100-106*

Federal Republic of Nigeria (1991), National Housing Policy: February 1991

Federal Republic of Nigeria (2006), National Housing Policy Document

Garba, T., Adamu, M.B. and Isa, M. (2007) The Implication of Poverty on Low Density Plots in the Urban Environment: The Case of Bauchi Metropolis. *A paper Presented at 1st Annual Conference, School of Environmental Technology, Federal University of Technology, Minna.pp84-88*

Jinadu, A.M. (2007) Understanding the Basics of Housing. *Revised Edition, Published by Jos University Press Ltd. P.M.B. 2084, Jos, Plateau State, Nigeria. Pp3-8, 154-156*

Kemiki, O.A. (2003) Housing Finance in Nigeria; Issues, Constraints and Possibilities. *A paper Presented at 1st Annual National Conference on Physical Planning in Nigeria, organized by Urban and Regional Planning Department, Federal University of Technology, Minna.*

Mittal, V.P. (1978) Low-Cost Housing System: The Urban Poor. *In proceedings of the IAHS International Conference on housing problems in developing countries. Dhahran, Saudi Arabia By interprint (Malta) Ltd.* Pp77-85

Majzub, I.E. (1978) Evaluation of Mass Housing Techniques, Optimization Proposals. *In proceedings of the IAHS international Conference on housing problems in developing countries. Dhahran, Saudi Arabia. By interprint (Malta) Ltd.*pp397-399

Makanjuola, O. (2003) How to Buy Property Safely in Nigeria. *Published by bookcraft Ltd, 29 Moremi Road, New Bodija Ibadan, Oyo State.*

Morenikeji, F. O. (2002) Environmental Quality and Rental Values of Residential Properties in Ibadan. *B.Tech, Project Submitted to the Department of Estate Management, Federal University of Technology, Minna.*

Morenikeji, O.O. (2006) Research and Analytical Methods. *Published by Jos University Press Ltd.*

Ogunyomi, A. (2006) The Effects of Infrastructural Facilities on Residential Property Values. A Case Study of Abuja. *B.TECH, Project Submitted to the Department of Estate Management, Federal University of Technology, Minna.*

Ojetunde, I. and Morenikeji, G. (2006) Urban Infrastructure Provision and Management: Analysis of Perception of Residential Quality and Trends in Property Values. *A paper presented at the 1st Annal Conference of the School of Environmental Technology, Federal University of Technology, Minna.pp374-382*

Ojigi, M.L. and Kemiki, O.A. (2007) Exploring the Relevance of Geographic Information System in Real Estate; Case Study of Bosso Estate, Minna. *(MCPD) Workshop Papers on GIS and Land*

Administration and Management. Organized by The Nigerian Institution of Estate Surveyors and Valuers. Niger State Branch.

Onibokun, P. (1982) Housing Needs and Responses: A Planner View Point. *Journal of the Nigerian Institute of Town Planners. (vol.11, no 1 & 2).Published by intecprinters Ltd,* old Lagos road, Ibadan, Nigeria.

Onokerhoraye, G.A. (1984) Social Services in Nigeria. *London kegan Paul International.*

Osoko, O.S. (2006) Environmental Protection Laws in Nigeria: Appraisal of their Origin, Content and Effectiveness. *In Edited Book Titled "Environmental Planning and Management: Concept and Application to Nigeria. Edited by: Tunde Agboola. Published by Counstellationbook, Ibadan (2006). Pp71-80*

Richard, R. (2001) The increasing importance of Housing Demography in the 21ST Century. A paper presented at Royal Institute of Chartered Surveyors Cutting Edge 2001 Conference, Oxford Brookes University

Sinha, I.B. (1987) A Solution to the Problem of Low-Income Group Housing in Developing Countries by use of Pre-fabricated Systems. *In proceedings of the IAHS international conference on Housing problems in developing countries. Dhahran, Saudi Arabia. Published by interprint (Malta) Ltd.* pp50

Udia, C. (2003) Environmental Impact Assessment: A tool for Environmental Management and Sustainable Development. *Journal of The Nigerian Institution of Estate Surveyors and Valuers (vol. 26, no 1, March 2003).pp39-43*

Uyanga, J.T. (1998) "Urban Environment Dynamics, Management of Urban Master Plan" Master Planning Approach to Physical Development. *The Nigeria Experience Parachelete Yola, Nigeria.*

Maps of the World. Retrieved from www.mapsofworld.com on9th November, 2008

The Nigeria/Federal Capital Territory Abuja Retrieved from http://www.maplibrary.org/stacks/Africa/Nigeria/Federal%20Capital%20Territory%20-Abuja/Gwagwala/index.php on 9th November, 2008

APPENDIX I

FEDERAL UNIVERSITY OF TECHNOLOGY, MINNA

SCHOOL OF POSTGRADUATE

DEPARTMENT OF GEOGRAPHY

SURVEY QUESTIONNAIRE FOR RESIDENTS OF ABAJI CITY

TOPIC: EVALUATION OF HOUSING QUALITY IN ABAJI CITY, FEDERAL CAPITAL TERRITORY, NIGERIA.

This questionnaire is designed purely for academic purpose.

SOCIO- ECONOMIC SURVEY OF RESPONDENT

1. Name.....
2. Age:
    a. Below 20 years ()
    b. 21-30 years ()
    c. 31-40 years ()
    d. 41-50 years ()
    e. 51 years and above ()
3. Gender:
    a. Male ()
    b. Female ()
4. Your marital status?
    a. Single ()
    b. Married ()
    c. Widowed ()
    d. Divorced ()
5. Level of education
    a. Primary education ()
    b. Secondary education ()
    c. Tertiary education ()
    d. No education ()
6. Occupation and employment structure
    a. Self employed ()
    b. Government employed ()
    c. Private employed ()
    d. Unemployed ()
7. Level of income monthly
    a. #10,000-#50,000 ()
    b. #51,000-#100,000 ()
    c. #101,000-#150,000 ()
    d. #151,000-#200,000 ()
    e. #201, 000 and above ()

HOUSING SURVEY Please tick the appropriate responses

1. What type of building do you live in?
    a. Bungalow ()
    b. Semi-detached ()
    c. storey building ()
    d. Traditional compound ()
    e. Rooming(Face to Face) ()

2. What are you using the building for?
    a. Only residential ()
    b. Only commercial ()
    c. Residential/Commercial ()
    d. Industrial ()
    e. Public use ()
    f. Others(specify) ()
3. What is the age of the building?
    a. 1-10years ()
    b. 11-20 years ()
    c. 21-30 years ()
    d. 31 and above ()
4. What is the nature of your tenure?
    a. Owner-occupier ()
    b. Rentage ()
5. If rentage, how much do you pay as rentage annually?
    a. #6,000-#30,000 ()
    b. #30,000-#100,000 ()
    c. #100,000-#150,000 ()
    d. #150,000-#200,000 ()
    e. #200,000 above ()
6. What is the predominant wall material of the house?
    a. Sandcrete plastered ()
    b. Burnt brick ()
    c. Sandcrete ()
    d. Mud plastered ()
    e. Others (specify) ()
7. How would you describe the mud condition?
    a. Cracking ()
    b. Dilapidating ()
    c. Good (No cracking) ()
8. What is the predominant roof material of the house?
    a. Concrete decking ()
    b. Thatched ()
    c. Asbestos ()
    d. Zinc metal ()
    e. Aluminum long span ()
9. How would you describe the roof condition?
    a. Leaking ()
    b. Rusty ()
    c. Sagging ()
    d. Part missing ()
    e. Good ()
10. What is the predominant floor material of the house?
    a. Cement ()
    b. Terrazzo ()
    c. Timber ()
    d. Mud ()
    e. Others (specify) ()
11. How would you describe the floor condition?
    a. Cracked ()
    b. Dry ()
    c. Good (No cracking) ()

d. Others (specify) ()

12. What is the predominant window of the house?
    a. Louvers glass ()
    b. Sliding glass ()
    c. Wooding ()
    d. Mat ()
13. How would you describe the window condition?
    a. Broken ()
    b. Falling off ()
    c. Good ()
14. What is the major door material of the house?
    a. Metal door ()
    b. Metal/glass ()
    c. Glass ()
    d. Wooding ()
    e. Mat ()
15. How would you describe the door condition?
    a. Broken ()
    b. Falling off ()
    c. Good ()
    d. None ()
16. What type of material used for ceiling?
    a. Asbestos ()
    b. Mat ()
    c. Wooding ()
    d. Cardboard ()
    e. Cardboard ()
17. What is the condition of the ceiling?
    a. Good ()
    b. Leaking ()
    c. Part missing
    d. None ()
18. What type of toilet do you have?
    a. Open bush ()
    b. Pit latrine ()
    c. Water closet ()
    d. VIP toilet ()
19. Where is your toilet located?
    a. In-house ()
    b. Outside main building ()
    c. Outside compound ()
20. Is the toilet exclusive to your family?
    a. Yes ()
    b. No ()
21. What type of bathroom do you have?
    a. Shower bathroom ()
    b. Bath ()
    c. Floor ()
    d. None ()
22. Where is your bathroom located?
    a. In-house ()
    b. Outside main building ()
    c. Outside compound ()

23. Is the bathroom exclusive to your family?
    a. Yes ()
    b. No ()
24. How would you describe drainage in your area?
    a. Open ()
    b. Covered ()
    c. None ()
25. What is the condition of the drainage?
    a. Free ()
    b. Blocked ()
    c. None ()
26. How would you describe accessibility to your house?
    a. Footpath ()
    b. Tarred road ()
    c. Un-tarred road ()
    d. Tar-washed off ()
27. Where do you park your car (if any)?
    a. Garage ()
    b. Open space ()
    c. On-street ()
    d. Filling station ()
    e. None ()
28. How regular is power supply (Electricity) in your area?
    a. Very regular ()
    b. Regular ()
    c. Irregular ()
    d. No supply ()
29. How do you get water for domestic use in your house?
    a. Well ()
    b. Water tanker ()
    c. Stream/River ()
    d. Pipe borne water ()
    e. Water Hawkers (Mairuwa) ()
30. How much do you spend on water daily?
    a. #100-#200 ()
    b. #200-#300 ()
    c. #300-#400 ()
    d. #400-#500 ()
    e. #500 and above
31. What is the mode of storing waste in your house?
    a. Drum ()
    b. Cellophane ()
    c. bucket ()
    d. Open space ()
32. What is the mode of disposal of waste in the area?
    a. Open space ()
    b. Collected by agent ()

APPENDIX II

EXCEL OUTPUT OF MEAN HOUSING QUALITY

NUMBER	RESPDAG	GENDER	MARSTAT	EDUCATN	OCCUPT	INCOME	BILDTYPE	BULDUSE
1	3	1	3	3	3	2	2	6
1	3	2	4	4	4	1	2	6
1	3	2	4	4	2	1	2	6
1	4	2	4	3	4	1	2	6
1	4	2	4	3	4	1	2	6
1	1	2	3	3	1	.	2	6
1	4	2	4	3	2	1	2	6
1	1	2	3	1	1	1	4	6
1	2	1	3	3	2	1	5	6
1	1	1	3	3	1	1	5	6
1	1	2	3	2	1	1	5	6
1	3	2	4	4	4	2	5	6
1	5	2	4	4	4	2	5	6
1	4	2	4	4	4	3	5	6
1	4	2	4	4	4	3	5	6
1	4	1	4	4	4	3	5	6
1	3	1	3	4	3	2	4	6
1	1	1	4	1	2	1	5	4
1	3	2	4	4	4	1	5	6
1	2	2	3	3	2	1	5	6
1	4	1	4	4	4	2	5	6
1	3	2	4	4	4	1	4	6
1	2	2	4	4	4	1	5	6
1	2	1	4	3	4	1	5	4
1	4	2	4	2	4	2	5	6
1	3	2	4	4	4	1	5	6
1	3	2	3	4	2	1	5	4
1	1	1	3	4	.	.	5	6
1	4	1	4	4	4	3	4	6
1	1	1	4	4	1	1	4	6
1	3	2	4	4	4	2	5	6
1	3	2	4	4	4	2	4	6
1	3	1	4	4	1	.	4	4
1	3	1	4	4	1	.	4	6
1	3	1	4	4	4	2	5	6
1	4	2	4	4	3	4	5	6
1	3	2	4	4	3	3	4	6
1	4	2	4	4	3	3	4	6
1	5	1	4	4	4	3	5	6
1	3	2	4	4	4	2	5	6
1	2	2	3	4	4	1	5	6
1	1	2	3	4	1	5	5	6
1	3	2	3	4	2	1	5	6
1	2	1	3	3	4	1	5	5

1	2	2	3	4	1.		4	6
1	3	1	4	4	4	2	5	6
1	3	1	4	3	2.		5	6
1	4	2	4	4	4	1	5	6
1	3	2	4	4	4	1	5	6
1	4	6	2	2	2	5	2	4
1	3	2	4	4	4	2	4	6
1	3	1	4	4	4	2	5	6
1	5	2	4	4	4	3	5	6
1	2	2	4	3	4	1	2	6
1	3	2	3	4	2	1	2	6
1	3	2	4	4	4	3	5	6
2	2	2	3	4	1	1	1	6
2	3	1	4	3	1.		1	6
2	5	2	1	1	3	3	1	6
2	3	2	4	4	4	1	1	6
2	2	1	3	3	3	1	1	5
2	2	2	3	3	3	2	1	6
2	2	1	3	3	4	1	1	6
2	2	1	3	3	3	1	1	6
2	3	2	4	4	4	2	1	6
2	5	1	1	3	4	1	1	6
2	5	2	4	2	3	1	1	6
2.		1	4	3	4	1	1	5
2	4	2	1	1	1	1	1	6
2	4	2	4	3.		1	1	6
2	1	2	3	3	1	1	1	4
2	2	1	3	4	4	2	1	6
2	1	1	3	3	1	1	1	6
2	1	1	3	3	1	1	1	4
2	1	2	3	3	1	1	1	4
2	1	2	3	2	3	1	1	6
2	1	2	3	2	2	1	1	6
2	2	1	3	4	1	1	1	6
2	2	2	2	4	4	1	1	6
2	5	1	2	1	2.		1	6
2	3	1	2	4	4	1	1	6
2	5	1	2	2	2	3	1	6
2	5	1	2	1	1.		1	6
2	5	1	2	1	2	1	1	6
2	5	1	2	3	4	1	1	6
2	4	1	2	3	2	1	1	4
2	5	1	2	1	1.		1	6
2	3.		2	4	4	2	1	6
2	3	1	2	1	2	1	1	6
2	4	2	3	1	2	1	1	6
2	5	1	2	1	1.		1	6

2	5	1	2	1	1.		1	6
2	5	1	2	2	1.		1	6
2	5	1	2	2	2	1	1	6
2	2	1	1	4	1.		3	6
2	4	1	2	2	3	1	1	6
2	2	1	3	4	1.		2	6
2	5	1	2	2	2	1	2	6
2	3	1	2	4	4	1	3	6
2	4	1	2	4	2	1	2	4
2	4	1	2	4	3	1	2	4
2	2	1	1	4	1	1	2	6
2	4	1	2	4	4	2	2	4
2	4	2	4	2	2	1	2	4
2	2	2	4	4	4	1	3	6

EXCEL OUTPUT OF MEAN HOUSING QUALITY

BULDAGE	NATENUR	ANUARET	WALMAT	WALCOND	ROOFMAT	ROOFCOD	FLORMAT	FLORCOD
4	1	1	5	3	4	5	4	4
4	1	1	5	3	4	5	4	4
4	1	1	5	3	4	5	4	4
4	1	1	5	3	4	5	4	4
4	1	1	5	3	4	5	4	4
4	1	1	5	3	4	5	4	4
4	1	1	5	3	4	5	4	4
4	2	1	5	3	5	5	4	4
3	2	1	5	3	4	5	4	4
2	2	1	5	3	4	5	4	4
4	2	1	5	3	4	5	4	4
4	2 .		5	3	4	5	4	4
4	2 .		5	3	5	5	1	4
4	2 .		5	3	5	5	1	4
3	2 .		5	3	2	2	4	4
3	2 .		5	2	2	2	4	4
2	1	2	5	1	4	4	4	2
4	1	1	5	3	4	1	4	4
4	2 .		5	3	5	5	1	4
4	2	1	5	3	5	5	4	4
4	2 .		5	3	5	5	1	4
1	2 .		5	2	2	2	4	2
4	2 .		5	3	4	5	4	4
4	2 .		5	3	4	3	4 .	
3	2	3	5	3	2	5	4	4
3	2 .		5	3	5	5	1	4
4	2 .		2	3	4	5	4	4
3	2 .		5	2	4	5	4	4
3	2	1	5	3	5	5	4	4
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2	1	2	5	2	4	2	4	2
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4	2 .		5	3	3	5	5	4
4	1	4	5	3	4	5	1	4
4	1	4	5	3	4	5	1	4
4	1	4	5	3	4	5	4 .	
4	2 .		5	3	5	5	1 .	
4	2 .		5	3	5	5	4	4
3	1	2	5	3	4	5	4	4
4	2 .		5	3	4	5	5	4
4	1	1	4	2	4	5	4	3
1	2	1	2	2	1	2	4	2

4	2.		5	2	2	3	4	2
2	2.		5	2	4	4	4	2
2	2.		5	1	4	2	4	2
2	2.		5	2	2	2	4	2
2	2	5	1	4	2	4	2	3
2	4	4	5	3	3	4	5	4
2	1	2	5	2	4	4	4	2
4	2.		5	3	4	5	4	4
3	2.		5	2	4	2	4	4
4	1	1	5	3	4	5	4	4
4	1	1	5	3	4	5	4	4
3	2.		5	1	2	2	4	4
1	2.		2	2	4	4	4	4
3	2.		2	1	4	4	4	2
1	2.		2	1	4	2	4	2
1	2.		2	2	4	2	4	3
4	2	1	2	2	1	2	5	2
1	2.		5	3	4	5	4	3
4	1	1	2	2	1	2	4	2
4	1	1	2	2	1	2	4	2
2	2	5	2	4	4	4	2	3
2	2.		2	1	4	2	3	4
2	2.		2	2	4	4	4	2
3	1	1	2	2	4	4	4.	
2	2.		2	2	4	4	3	3
4	1	1	5	3	4	5	4	4
3.		1.	.		4	1	4.	
4	2	1	5	2	4	5	4	2
1	2	1	5	2	4	5	4	2
1	2	1	2	2	4	4	3	2
1	2	1	2	2	4	4	3	2
1	2	1	4	2	4	2	4	2
1	2	1	5	2	4	5	4	2
1	2	1	5	2	4	5	4	2
4	2.		5	3	4	5	4	4
1	2.		2	1	4	2	4	2
1	2	1	2	3	4	4	3	2
1	2.		2	2	4	4	4	2
1	2.		2	2	4	4	4	2
1	2.		2	1	4	2	4	2
1	2.		2	1	4	4	4	2
2	1	2	5	2	4	4	4	2
1	2.		2	1	4	4	4	2
1	2	1	2	2	4	1	3	4
1	2	1	4	2	4	5	4	2
1	1	1	2	2	4	2	3	2
1	2.		5	1	4	2	4	2

1	2.		5	1	4	2	4	2
1	2.		2	2	4	4	4	2
1	2.		2	2	4	4	4	2
1	2.		5	2	4	4	5	4
2	1	1	5	1	3	2	4	2
2	2.		2	1	4	4	4	2
3	2.		2	2	4	2	4	2
3	1	2	5	3	2	5	4	4
3	1	2	2	2	4	3	4	2
2	1	1	2	2	4	4	4	3
1.		1.	.		4.		3.	
1	2.		4	2	4	4	4	2
2	1	1	5	2	4	4	4	2
1	1	1	5	2	3	2	4	2
.	.	.	.	.	.	.	.	

EXCEL OUTPUT OF MEAN HOUSING QUALITY

WINDMAT	WINDCOD	DOORMAT	DOORCOD	CEILMAT	CEILCOND	TOILETYP	TOILELOC	TOIEXCL
4	3	3	4	5	4	2	2	1
5	3	3	4	5	4	3	2	1
5	3	3	4	5	4	2	2	1
4	3	3	4	5	4	2	2	1
4	3	4	4	5	4	2	2	1
4	3	3	4	5	4	2	2	1
3	3	2	4	5	4	2	1	2
5	3	4	4	5	4	4	3	2
5	3	4	4	5	4	3	3	2
5	3	4	4	5	4	3	3	2
5	3	4	4	5	4	3	3	2
6	3	3	4	5	4	3	3	2
6	3	2	4	3	4	4	3	2
6	3	2	4	5	4	4	3	2
5	3	2	4	5	4	3	3	2
5	3	2	4	5	4	3	3	2
5	2	2	2	5	4	4	3	2
3	3	2	4	5	4	1	1	1
6	3	2	4 .		4	4	3	2
5	3	4	4	5	4	4	3	2
6	3	2	4	5	4	4	3	2
5	2	2	2	5	3	3	3	2
6	3	2	4	3	4	3	3	2
5	3	5	4	5	4	3	3	2
6	3	2	4	5	4	3	3	2
6	3	2	4	5	4	4	3	2
5	3	3	4	5	4	3	2	2
3	3	2	4	5	4	2	2	2
5	3	4	4	5	4	4	3	2
6	3	3	4 .		4	3	3	2
5	3	4	4	5	4	4	3	2
5	3	4	4	5	4	4	3	2
5	2	2	3	3	3	1	1	1
5	3	2	4	3	4	3	3	2
5	3	3	4	1	4	3	3	2
6	3	2	4	5	4	4	3	2
6	3	2	4	5	4	4	3	2
5	3	2	4	5	4	4	3	2
6	3	2	4	5	4	4	3	2
6	3	2	4	5	4	4	3	2
2	3	2	4	5	4	3	3	2
6	3	3	4	5	1	3	3	2
2 .		3	4	5	4	2	2	1
5	1	3	4	4	4	2	1	2

3	1	2	3	5	3	3	3	2
5	2	2	3	5	3	3	3	2
3	1	2	2	5	2	2	2	1
5	2	2	2	5	2	3	3	2
1	2	2	5	2	3	3	2	2
2	3	2	2	3	2	3	2	4
5	2	2	4	5	4	3	3	2
5	3	2	4	5	4	3	3	2
5	3	4	4	5	4	3	3	2
4	3	4	4	5	4	2	1	1
3	3	3	4	5	4	1	1	1
5	2	3	2	5	2	3	2	1
3	3	2	4	5	4	2	2	1
3	1	2	4	5	2	2	1	1
3	1	2	3	5	2	2	1	1
3	3	2	4	4	4	2	3	2
6	1	4	4	4	4	2	3	2
3	3	2	4	5	2	2	1	1
3	2	2	3	5	2	2	1	1
5	1	3	4	4	4	2	1	2
3	2	4	5	2	2	2	1	2
3	1	2	2	4	4	2	1	1
3	1	2	2	4	4	2	1	1
3	1	2	3	3	2	2	1	1
1	2	2	1	1	3	1	1	2
5	3	2	4	3	4	2	2	1
	3	2		5	3	2	2	1
5	3	3	4	5	4	4	3	2
3	3	2	4	4	4	3	3	2
3	1	2	2	4	2	1	2	1
3	1	2	2	4	2	1	2	1
3	2	2	2	5	4	1	3	1
3	3	2	4	5	4	1	3	1
5	2	4	4	5	3	2	3	2
3	3	2	4	5	4	3	3	2
3	2	2	3	1	1	1		
3	3	2	4	2	4	1	1	1
3	2	2	3	5	2	1		1
3	2	2	3	5	3	2	1	1
3	2	2	3	1	1	1		1
3	1	2	2	5	2	2	1	1
3	1	2	2	5	3	1		1
3	2	2	4	5	2	1		1
3	3	2	4	5	4	1	1	1
3	3	2	4	2	4	1	3	1
3	3	2	4	2	4	1	1	1
3	1	2	3	5	2	1		1

3	1	2	3	5	2	1.		1
3	2	2	3	5	2	1.		1
3	2	2	3	1	1	1.		1
5	3	2	4	5	4	3	3	2
6	1	3	2	1	1	2	2	1
3	1	2	3	5	2	2	1	1
3	2	2	2	5	2	2	2	1
5	3	2	4	5	4	3	3	2
3	2	3	3	5	2	1.		1
3	1	3	3	3	2	2	1	1
3.		1.		3.		3	1	2
3	3	2	4	5	4	2	1	1
3	1	2	3	5	2	1.		1
5	2	4	4	1	1	2	2	1

BATHTYP	BATHLOC	BATHEXCL	DRAINAGE	DRAINCOD	ACCESS	CARPARK	POWERSUI	WATERSO
2	2	1	1	1	2	2	2	3
2	2	1	1	1	2	1	2	3
2	2	1	1	1	2	1	2	3
2	2	1	1	1	2	1	1	2
2	2	1	1	1	2	4	2	3
2	2	1	1	1	2	1	2	3
2	1	1	1	1	2	1	2	3
3	3	2	2	2	4	5	2	2
3	3	2 .		2	4	5	2	2
3	3	2	2	2	4	5	2	2
3	3	2	2	2	4	5	2	2
3	3	1	2	3	4 .		2	1
4	3	2	1	1	2 .		2	6
4	3	2	1	1	2 .		2	6
4	3	2	1	1	3	4	2	3
3	3	2	1	1	2	5	2	2
4	3	2	1	1	2	4	2	3
2	1	1	2	2	4	4	2	1
3	3	2	1	1	2	4	2	2
3	3	2	3	2	4	3	2	2
4	3	2	1	1	2	4	2	6
2	3	2	1	1	2	4	2	3
3	3	2	3	3	4	4	1	4
3	3	2	1	1	2	5	2	1
4	3	2	2	3	4	5	2	2
3	3	2	1 .		2	4	3	3
2	2	2	2	2	2	4	2	3
2	2	2	2 .		1	4	2	1
3	3	2	2	2	4	5	2	2
3	3	2	2 .		4	4	2	2
3	3	2	1	2	4	5	2	2
3	3	2	3	2	4	3	2	2
4	2	2	2	3	1	4	2	3
3	3	2	3	3	2	4	2	3
3	3	2	2	3	4	5	2	2
3	3	2	1	1	2	4	3	6
3	3	2	1	1	2	4	2	3
4	3	2	1	1	2	4	2	6
3	3	2	2	3	3	5	2	2
3	3	2	1	1	2	4	2	3
4	3	2	3	3	2	4	2	3
4	3	2	1	1	1	1	2	5
4	2	1	2	2	1	4	2	3
3	3	2	2	3	1	2	2	3

3	3	2	1	1	2	5	3	3
3	3	2	2	2	2	4	3	5
2	2	1	1	1	2	1	3	1
4	3	2	1	1	1	2	3	3
3	2	1	1	2	1	2	2	3
2	3	2	3	3	2	4	2	3
3	3	2	1	1	2	4	2	2
3	3	2	2	3	4	3	2	2
3	3	2	1	1	4	4	2	2
2	1	1	1	1	2	1	2	3
2	2	1	1	1	2	1	2	3
2	2	1	2	3	2	2	2	3
2	2	1	2	2	1	4	2	3
2	2	1	2	3	4	2	2	1
2	1	1	2	3	4	3	2	1
2	3	2	2	3	4	4	2	1
3	3	2	2	3	1	2	2	3
2	1	1	3	3	4	3	2	1
2	1	1	3	3	4	3	2	2
3	3	2	2	3	1	2	2	3
2	2	1	2	3	4	3	2	2
2	1	1	3	3	4	3	2	2
2	1	1	2	3	4	1	2	1
2	1	1	1	1	1.		2	1
2	1	2	1	1	1.		1	1
2	1	1	3	3	4	1	2	3
3	2	1.		3.		2	2	1
3	3	2	2	3	4	3	2	3
3	3	2	2	3	4	4	2	2
2	2	1	2	3	1	4	2	1
2	2	1	2	3	1	2	2	1
4	3	1	1	4	4	3	2	1
4	3	1	2	2	4	4	2	1
2	3	2	2	3	4	2	2	3
2	3	2	3	3	2	5	1	4
2	1	1	2	3	4	3	2	1
2	3	1	2	3	1	4	2	1
2	1	1	2	1	4	3	2	1
2	1	1	2	3	4	3	2	2
2.		1	3	1	4	1	2	1
2	1	1	2	2	4	3	3	2
2	1	1	2	3	4	1	2	3
2	1	1	2	3	4	2	2	1
2	1	1	2	3	4	4	2	3
2	3	1	2	3	4	5	2	1
4	1	1	2	3	1	2	2	1
2	1	1	2	3	4	3	2	1

2	1	1	2	3	4	3	2	1
2	1	1	2	3	4	1	2	1
2	1	1	2	3	4	1	2	1
4	3	2	2	3	4	5	2	2
1	2	2	3	1	2	1	2	3
2	1	1	1	1	2	1	3	3
2	2	1	1	1	2	1	3	5
3	3	2	3	4	4	4	2	3
2		1	3	2	4	3	3	4
2	1	1	3	2	2	2	1	3
4	1	2				1	2	5
2	1	1	2	3	4	1	2	3
2	1	1	2	3	4	1	2	3
2	2	1	1	1	2	4	2	3

WATERSP	WASTSTO	WASTDISP	TOTAL/38	MEAN QUALITY
5	1	1	106	2.789473684
5	2	1	111	2.921052632
5	2	1	108	2.842105263
5	1	1	106	2.789473684
2	2	1	110	2.894736842
5	2	1	101	2.657894737
5	2	1	104	2.736842105
4	2	1	119	3.131578947
4	2	1	118	3.105263158
5	1	1	117	3.078947368
5	2	1	120	3.157894737
5	2	1	122	3.210526316
	2	1	117	3.078947368
	2	1	119	3.131578947
2	2	1	117	3.078947368
4	2	1	115	3.026315789
4	2	1	110	2.894736842
5	3	2	100	2.631578947
4	1	1	113	2.973684211
4	3	2	125	3.289473684
	2	1	121	3.184210526
4	2	1	103	2.710526316
4	2	2	125	3.289473684
5	1	1	111	2.921052632
5	3	2	130	3.421052632
4	1	1	118	3.105263158
5	1	1	112	2.947368421
5	1	1	100	2.631578947
4	2	2	130	3.421052632
1	2	1	104	2.736842105
4	3	1	130	3.421052632
4	3	2	128	3.368421053
5	1	1	97	2.552631579
5	2	1	117	3.078947368
4	3	1	123	3.236842105
	2	1	125	3.289473684
1	2	1	119	3.131578947
	1	1	120	3.157894737
1	1	1	119	3.131578947
3	2	1	123	3.236842105
4	2	1	120	3.157894737
5	1	2	118	3.105263158
5	1	1	106	2.789473684
5	2	2	98	2.578947368

4	1	1	101	2.657894737
	2	1	112	2.947368421
5	1	1	88	2.315789474
5	1	1	105	2.763157895
4	2	1	101	2.657894737
4	2	1	116	3.052631579
2	2	1	111	2.921052632
2	2	1	121	3.184210526
2	2	1	120	3.157894737
4	1	1	104	2.736842105
5	2	1	103	2.710526316
3	1	1	104	2.736842105
4	2	1	97	2.552631579
5	1	1	90	2.368421053
4	2	1	88	2.315789474
2	2	1	102	2.684210526
5	3	2	103	2.710526316
	1	1	96	2.526315789
4	1	1	90	2.368421053
5	2	2	97	2.552631579
3	2	1	106	2.789473684
3	1	1	90	2.368421053
4	1	1	91	2.394736842
5	2	1	78	2.052631579
	1	1	67	1.763157895
5	3	1	109	2.868421053
4		2	69	1.815789474
5	2	1	120	3.157894737
1	2	1	102	2.684210526
5	1	1	81	2.131578947
5	1	1	80	2.105263158
5	1	1	96	2.526315789
5	2	1	103	2.710526316
5	2	1	108	2.842105263
4	2	1	116	3.052631579
	2	1	73	1.921052632
5	3	1	95	2.5
	2	1	84	2.210526316
1	2	1	86	2.263157895
	1	1	70	1.842105263
2	1	1	88	2.315789474
4	2	1	90	2.368421053
3	1	1	82	2.157894737
5	1	1	97	2.552631579
5	2	1	98	2.578947368
5	2	1	86	2.263157895
4	2	1	84	2.210526316

5	2	1	85	2.236842105
5	1	1	84	2.210526316
	1	1	76	2.0
2	1	1	109	2.868421053
4	1	1	85	2.236842105
5	2	1	85	2.236842105
	1	1	85	2.236842105
5	3	1	123	3.236842105
1	1	1	90	2.368421053
5	4	1	92	2.421052632
5		1	63	1.657894737
3	1	1	97	2.552631579
4	1	1	91	2.394736842
4	2	1	96	2.526315789