THE EFFECTS OF ENCROACHMENT ON SUSTAINABLE PUBLIC LAND MANAGEMENT: A CASE STUDY OF THE OWABI CATCHMENT AREA IN KUMASI

by

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A Thesis submitted to the Department of Land Economy,

Kwame Nkrumah University of Science and Technology

in Partial fulfillment of the requirements for the degree

of

MASTER OF PHILOSOPHY

(Land Management)

Faculty of Planning and Land Economy,

College of Architecture and Planning

December 2012

DECLARATION

I hereby declare that this submission is my own work towards the MPhil and that, to the best of my knowledge, it contains neither material previously published by another person nor material which has been accepted for the award of any other degree of the University, except where due acknowledgement has been made in the text.

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ABSTRACT

Land is a basic resource and almost all activities of man hinges on land. To ensure equitable and sustainable livelihoods for the people, governments provide some basic infrastructure and services that are essential for the development of the nation. For this reason, various governments as part of their priority policies reserve and declare certain areas as public lands to be used for such public services and the Owabi catchment is of such a nature. The Owabi catchment was specifically acquired for the production of potable water for Kumasi and its environs. Thus, the government has the responsibility of ensuring that the area acquired is protected against any other use and as such institutions like the Lands Commission, Environmental Protection Agency, district assemblies, etc have been entrusted to see to the proper and sustainable management of the area. However, the Owabi catchment seems to be poorly managed and facing serious challenges. The catchment of late has come under serious pressure because of encroachment which is becoming alarming. The site has been sub-divided, allocated and developed mostly for private residential and farming purposes. The toll of the encroachment on its management cannot be over-emphasised. The study sought to investigate the encroachment phenomenon in the Owabi catchment, assess the effects of encroachment on sustainable land management, identify the problems that the Stakeholder institutions are confronted with in the management of the area, and come up with policy recommendations of resolving the encroachment and of ensuring sustainable and effective management of the catchment. The study revealed that the law; Ashanti Administration Ordinance, 1902 (Cap 110) used for the acquisition of the Owabi catchment did not make provision for compensation payment for the land. It also revealed that the encroachments which are mostly in

the form of buildings started over two decades ago but became more alarming in 1997. Interestingly, properties demolished in 1998 had almost all been rebuilt. Factors that seem to have given way to the encroachment included among others the non-payment of compensation, lack of alternative livelihood for the indigenes, and improper boundary demarcation. The encroachment has had negative effects on the management of the catchment resulting in the non-enforcement of the land use plan and building regulations, high cost of water production and reduction of government's revenue. In the light of the above findings, some recommendations have been made for resolving the encroachment issue and improving the sustainable management of Owabi catchment area in particular, and other catchments in general. These include the seeking of injunction order to halt the continuous development in the catchment, educating and sensitizing the public on the environmental impact such developments have on the dam, the setting up of a management technical committee inclusive of the chiefs and members of the communities to assess the situation to see how best the encroachment could be controlled, adopt participatory land management and considering indigenes who qualify for employment in the Ghana Water Company Limited. It is hoped that the use of participatory approaches by both stakeholder institutions and the surrounding communities of the catchment in controlling encroachment and subsequent management of the Owabi catchment in line with the given recommendations would be a sure route towards sustainable land management of catchments in Ghana.

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ABBREVIATIONS AND ACRONYMS USED

AFRCD:	Armed Forces Revolutionary Council Decree
DCO:	Development Control Officer
EI:	Executive Instrument
EPA:	Environmental Protection Agency
FC:	Forestry Commission
FGD:	Focus Group Discussion
GNFS:	Ghana National Fire Services
GWCL:	Ghana Water Company Limited
GWD:	Game and Wildlife Department
JHS:	Junior High School
KMA:	Kumasi Metropolitan Assembly
KPC:	Kumasi Planning Committee
KTC:	Kumasi Traditional Council
LI:	Legislative Instrument
LRD:	Land Registration Division
LVD:	Land Valuation Division
MCE:	Metropolitan Chief Executive
NDPC:	National Development Planning Commission
NLM:	National Liberation Movement
OASL:	Office of the Administrator of Stool Lands
PNDC:	Provisional National Defense Council
PRA:	Participatory Rural Appraisal
PVLMD:	Public and Vested Land Management Division
RCC:	Regional Coordinating Council

SLM:	Sustainable Land Management
SMD:	Survey and Mapping Division
TCPD:	Town and Country Planning Department
WMO:	World Meteorological Organization

ACKNOWLEDGEMENT

My heartfelt gratitude goes to God for His grace shown to me. My sincere thanks to the following for their invaluable support towards the completion of this thesis:

I am greatly indebted to my supervisor; Mr. Mark Adolwine and Dr. J. T. Bugri, Head of Department of Land Economy, KNUST, who have been with me from the beginning to the end of this thesis. I acknowledge the invaluable support of my lecturers, both from within and outside the Department in the course of my studies for their guidance, direction, inspiration and suggestions for the completion of this work.

I also thank my lovely husband, Mr. Kwasi Ntiamoah for his patience, understanding and encouragement during times I could not give him the necessary attention as a result of this report. I also appreciate the support of my parents Mr. Johnson Agyen-Brefo and Mrs. Mary Debrah Brefo for their enormous support in my education to this level. I am greatly grateful to you. My sincere thanks also go to all the institutions, organisations, communities and individuals who provided information to enable me undertake this research work. I am most grateful to Mrs. Afua A. Obeng-Mireku and Mr. Jonathan Ayitey (Zinzi) for their rich contributions and encouragement in the course of my research. To my comrades, Kwaku Obeng Mireku, Mrs. Abena Serwaa Armah and Yusif Adamu whose suggestions, contributions and assistance in data collection for this work have brought me this far, I say many thanks.

Finally, to all those who in diverse ways have contributed to the success of my studies, I say thank you and may Jehovah God bless you all for your kindness.

DEDICATION

This work is dedicated to Almighty God, Jehovah for the support, protection and seeing me through this programme and making it a success.

CHAPTER ONE

INTRODUCTION

1.1 Background to the Study

Land is a basic resource without which man cannot live since almost all activities of man hinges on land. It is the integrating component of all livelihoods depending on farm, forest, range land, or water (rivers, lakes, coastal marine) habitats (World Bank, 2006). To ensure equitable and sustainable livelihoods for the people, governments provide some basic infrastructure and services that are essential for the development of the nation. For this reason, various governments as part of their priority policies reserve and declare certain areas as public lands to be used for such public services. These lands are normally acquired for specific public purposes such as for schools, hospitals, universities, road construction, utility services, potable water, etc. In Ghana these lands are usually compulsorily acquired by the government through the use of appropriate legislations. Such acquired lands are then vested in the President and held in trust by the State for the entire people of Ghana (State Lands Act, 1962 (Act 125). Thus, after acquisition the government has the responsibility of ensuring that such lands are protected against any other use.

In recent times, however, encroachment of protected areas continues to be a major global problem. Public lands and other reservations have been grossly encroached upon for mainly physical developments such as for residential, commercial and religious purposes and for agricultural and livestock production as well.

The driving forces of encroachment are believed to be diverse. The two key factors however, considered to be the driving forces for the encroachment of land are the demand for residential space and agricultural production (Walker, 2001). The

rapidly growing global population has resulted in the increased demand for land. In the early times when the population was small and there were large tracts of virgin land, there was no limit to the extent of vacant stool or family land a subject or member could reduce to his own possession and use. So long as the land remained a virgin forest any individual member of the community could appropriate it without reference to the head of the community (Barlowe, 1986). Everybody and anyone could till and occupy a portion of communally-owned land to the exclusion of others. However, the rapid growth of population and urbanisation and the consequent pressure on land over the years means that land is not so easily or readily available. Most urban lands are almost fully developed yet demand for land in these areas continues to be on the ascendancy.

This competitive demand for land especially in the cities sometimes reflected itself negatively in the encroachment of public lands such as waterways, school lands, public utility areas and open spaces. Of particular concern however is the protected areas called the catchment. The sustainable management of such areas has seriously been brought into question. Institutions entrusted with the management of land have relaxed and tend to be inefficient in discharging their duties. This has become a great challenge for many countries, especially developing countries in the management of these protected areas.

1.2 Problem Statement

The problem of encroachment of public lands through physical development poses problems to sustainable land management. Encroachment on public property according to Lake (2007) is defined as:

> "the existence of any structure or item of any kind under, upon, in, or over the project lands or waters and/or the destruction, injury,

> defacement, removal or any alteration of public property including natural formations, historical and archaeological features, and vegetative growth."

It also "denotes an illegal activity as one where the person who encroaches is not deemed to have any legal right to do so" (Shitima, 2005).

The above two definitions suggest that encroachment results when there is an unlawful activity/entry on land (gradually and without permission) on land.

Sustainable land management is a knowledge-based procedure that integrates land, water, biodiversity, and environmental management to meet rising food and fibre demands while sustaining livelihoods and the environment (World Bank, 2006). The central aim of sustainable land management is not how to preserve nature in a pristine state but how to co-exist with nature in order to maintain the functions of the land resources for the benefit of society in a sustainable manner *(Source: World Bank).*

The Owabi catchment area had seen encroachment over the years and it is still on-going. The site has been sub-divided, allocated and developed mostly for private residential and farming purposes. For example, out of the 4,134.5 acres of land acquired for the Owabi dam and its catchment, about a third of it (i.e. 1,378.2) had been grossly encroached upon *(Source: GWCL (Kumasi), 2011).* The major problems identified that have necessitated the need for this study and which pose a challenge to the management of the catchment area include the following;

a) Massive encroachment in the form of unauthorised development and illegal activities including farming and sand winning which do not conform to the zoning of the area.
b) General disregard for building rules and regulations with some developments found very close to some of the major tributaries feeding the Owabi dam.

1.3 Objectives of the Study

Specifically the study seeks:

a. To examine the legal framework for the acquisition of the Owabi catchment area and the consequential issues of compensation payments and resettlement;
b. To assess the magnitude of encroachment in the study area and the effect it is having on sustainable land management;
c. To investigate the major factors engendering the encroachment; and finally
d. To examine the roles of the institutions entrusted with the management of the area and evaluate the problems they are confronted with.

1.4 Research Questions

The study seeks to find answers to the following questions:

1. Which law was used in the acquisition of the Owabi catchment area and did it require compensation to be paid?
2. What is the present state of encroachment in the study area and what are the causative factors of the encroachment in the Owabi catchment area?
3. What problems do the institutions entrusted with the management of the land encounter in enforcing land use planning and building regulations in the study area?
4. What effect does the encroachment have on the sustainable management of public land in the study area?
5. What can be done to halt the encroachments and ensure the sustainable management of public lands and catchment areas in particular?

1.5 Justification of the Study

The study on the encroachment in the Owabi catchment area is an important and timely one. One of the objectives of the global UN Millennium Development Goals (MDGs) is making water available to all by 2015. Provision of potable water is therefore one of the priority focus of the government. To ensure the continuous supply of enough quality water, some specific areas of land are reserved for the protection of water bodies. This is the case with the Owabi catchment. The Owabi dam is one of the main sources of water to the Kumasi metropolis and its suburbs. However, over the years, the Owabi catchment has been massively encroached upon and the phenomenon is still raging. This has impacted negatively on the dam, on the environment and general management of the area.

Even though many studies in this area have been conducted especially in relation to environment, none seems to accentuate the issue of sustainable management practices. This study is especially undertaken to examine the effect of the encroachment on sustainable management of the catchment and to propose improved management practices to ensure sustainable supply of quality water to the people of Kumasi and beyond.

1.6 Scope of the Study

Geographically, the study covers the Owabi catchment area known as the Statutory Catchment as it appears originally on the site plan at the time of acquisition. In content wise, the study is limited to the effect of encroachment on the sustainable management of public land in the study area.

1.7 Limitations of the Study

- The Researcher faced several problems but the most important problem was getting some of the respondents especially the property owners to complete the questionnaire. When such a situation arose, the next person much more related to the owner was interviewed but some did not know all the information needed. This is seen in the answer option 'Don't know'.
- Some of the property owners were also reluctant to disclose some material facts especially pertaining to leases and permit status. Some respondents had the fear that it was agents of the government conducting the research in order to come up with another demolition exercise and so were reluctant to speak. However, the researcher disabused their minds by showing evidence that the research was purely for academic work. In some instances, the researcher resorted to the help of the traditional authorities to beat a 'Gongong' to inform the people beforehand and to also assure them that the exercise is for academic work only. This was especially the case with the Bokankye Community. These measures reduced their fears to certain extent and some responded favourably.

These limitations notwithstanding, the multiple nature of the sources of data, the oral account of opinion leaders who have lived in the surrounding communities for long, and the approaches employed in gathering and analysing the data, offer the information obtained great degree of reliability.

1.8 **Relevance of the Study**

The study is particularly beneficial to the government or the land sector agencies that are engaged in the management of public lands. The information provided

would help in making and reshaping policies relating to the management of public lands in the Owabi Catchment area. The recommendations could help curb the incidence of public land encroachment in other catchments in Ghana and would further ensure sustainable land management. The general public could also benefit from the research as a source of reference for future research in similar areas.

1.9 Structure of the Study

The study is made up of six chapters. Chapter one is the general introduction to the study which covers the background to the study, a statement of the research problem, objectives, research questions, and the justification of the study. Other topics include the limitations and the relevance of the study.

The second chapter reviews literature on compulsory acquisition and sustainable land management issues. Land ownership regimes in Ghana including pre-independence and post-independence legal framework as well as the procedure for compulsory acquisition and compensation of land have also been undertaken in this chapter. It also reviews the institutional framework for sustainable land management especially the roles played by the various land sector agencies in land management. The chapter finally reviews the role of land use planning in sustainable land management.

The third chapter examines the profile of the study area paying particular attention to the location of the waterworks and the need for the construction of the Owabi Dam. It also delves into the acquisition and compensation issues of the catchment and its encroachment. It discusses the expected roles of the various stakeholder institutions involved in the management of the Owabi catchment area and the difficulties they experience in its management.

Chapter four gives details about the research approach and methodology which includes the sampling method, the data sources and the various tools and techniques used in gathering the data. The methods adopted in the data processing, analysis and reporting have also been discussed.

The presentation and analysis of the data are in chapter five. Data collected from the field are presented and analysed in this chapter. These include among other things respondents' view of the encroachment situation in the catchment, the factors that seem to engender the encroachment in the study area and the effects of the encroachment on sustainable land management of the Catchment.

Chapter six presents the summary of findings and recommendations toward curtailing future encroachment and of ensuring or improving upon sustainable land management in the Catchment.

CHAPTER TWO

LAND OWNERSHIP CLASSIFICATION, ACQUISITION & ENCROACHMENT OF LAND

2.1 Introduction

This chapter discusses the land ownership regime in Ghana and the statutory legal interventions for compulsory acquisition of land and compensation payments. It also discusses the institutional framework for sustainable land management especially the roles played by the various Land Sector Agencies. Encroachment on public lands, especially reserved lands that protect dams and river bodies that supply potable water to towns have also been considered.

2.2 Concept of Land

Land according to Ollenu (1962)

> "...includes the land itself, i.e., the surface soil; it includes things on the soil which are enjoyed with it as being part of the land by nature, e.g., rivers, streams, lakes, lagoons, creeks, growing trees like palm trees and dawadawa trees, or as being artificially fixed to it like houses, buildings and structures whatsoever; it also includes any estate, interest or right in, to over the land or over any of the other things which land denotes, e.g., the right to collect snails, herbs, or to hunt on land."

However, the Conveyancing Decree, 1973 (NRCD 175) at Section 45 defines land to include *"land covered by water, any house, building or structure whatsoever, and any interest or right in, to or over land or water."* This same definition is also confirmed by the Interpretation Act, 1960 (CA_4) Section 32. The Ghana Civil Aviation Act, 2004 (Act 678), Section 42 states thus; *"land includes an estate and any other interest in or right over land"*.

From the above definitions, land is viewed from two different perspectives. Land is considered as something physical or tangible which includes natural things

such as the soil and all things attached to the soil including lakes, trees, rivers, etc and man-made things like buildings, structures, amongst others. Land can also be perceived as intangible (i.e. rights and interests held in land). These include such interests/rights as assignments, leases, tenancies and easements, and mortgages. Land is so basic to every human activity. It supports man's existence and his day-to-day activities. This can be inferred from the observation by Barlowe (1986) who states that:

> "...land is the habitation of man, the store-house upon which he must draw for all his needs, the material to which his labour must be applied for the supply of all his needs and desires…, on land we are born, from it we live and to it we shall return again. Children of the soil as truly as is the blade of grass or the flower of the field. Take away from man all that belongs to land and he is but a disembodied spirit."

Similarly, in a report on land administration prepared for the Food and Agriculture Organisation (FAO), 1953, Sir Bernard Binns observed that:

> "Land is man's most valuable resource. It is indeed much more than this: it is the means of life without which he could never have existed and on which continued existence and progress depend. Resources that had taken many million years to accumulate have been squandered or allowed to waste away in a few decades, and this squandering and wastage is likely to continue on an increasing scale wherever definite measures to stop it are not undertaken."

A summary of all these views suggests that judicious use of this valuable resource must be adopted to stem the continuous wastage and guarantee the supply of the resource to future generations.

2.3 Land Ownership Classification in Ghana

Fundamentally, land ownership is based on the ownership of the "allodial" title or interest to land. In Ghana, as observed by Ollennu (1962) and many other great scholars, there is no land without an owner. According to the National Land Policy

Document (1999), land ownership in Ghana is broadly divided into two; private lands and public/state lands. However, sandwiched between these two are vested lands.

2.3.1 Private Lands

Land in most parts of the country are in communal ownership, normally held in trust for the community or group by a stool or skins which are the symbols of traditional authority, or by a family. These lands are managed by a custodian (a chief or a head of family) who work in consultation with council of elders of the family/community. Any decision that affects the rights and interests in the land, especially the disposition of any portion of the communal land to non-members of the land holding community, requires that the custodian concur with the principal elders. Custodians of private lands therefore hold the land in a fiduciary capacity and they are accountable to the members of the land owning community. This is given legal backing in Article 267(1) of the 1992 Constitution. Stool or skin lands are a feature of land ownership in almost all the Akan traditional groups in southern Ghana and in most traditional groups in northern Ghana.

However, there are a number of traditional groups, which do not recognise a stool or skin as symbolising private communal land ownership. In this case, the traditional arrangement is normally that of vesting land ownership in the clan, family or individual. This feature of land ownership is practiced in the Volta region and in some traditional areas in the Central, Eastern, Greater Accra, and some areas in the Northern, Upper East and Upper West regions of Ghana.

In Kumasi, lands which fall under Private lands are termed Part Two lands (Kumasi Town Boundary Ordinance, 1928 (CAP 143)). Stool lands in Kumasi are

held by the Asantehene who holds it in trust for the entire Asante community. Although Stool lands are granted by the Asantehene, consent need to be sought from the Lands Commission (See Article 267(3) of the 1992 Constitution and the Chieftaincy Act, 1971 (Act 370)). In Ghana private lands constitutes about 78 percent of the total land area. (Kasanga, 1988). Similarly, in Kumasi, private lands (specifically, Stool lands) constitutes about 66% (*Source: Lands Commission (Kumasi), 2011).*

2.3.2 Public/State Lands

These are lands compulsorily acquired by the State through the invocation of the appropriate legislations. Such lands are vested in the President and held in trust by the State for the entire people of Ghana. Public land is defined in Article 257(2) of the 1992 Constitution to include;

> "Any land which immediately before the coming into force of this Constitution, was vested in the Government of Ghana on behalf of, and in trust for, the people of Ghana for the public services of Ghana, and any other land acquired in the public interest, for the purposes of the Government of Ghana before, on or after that date."

The acquisition of public lands by the government comes in two (2) forms; compulsory acquisition and acquisition through negotiations or private negotiations with the land owners. The government delegates the power of management of Public lands to the Lands Commission. Article 258(1) (a) of the 1992 Constitution of Ghana states that the Lands Commission in co-ordination with the relevant public agencies and governmental bodies "*on behalf of the Government, manage public lands and any lands vested in the President by this Constitution or by any other law or any lands vested in the Commission."* The mandate to manage all public lands in Kumasi is given to the Regional Lands Commission, which performs this task on

behalf of the government and in collaboration with other Land Sector and other relevant public agencies.

2.3.3 Vested Lands

Sandwiched between public and private lands are vested lands which are a form of split ownership between the state and the traditional owners. They are lands initially belonging to a particular community but now vested in the state in trust for the land owning community. This vesting of land is a form of intervention by the state in land ownership which entails the taking over by the state of customarily-owned land to be held in trust for the community.

In doing this, the government draws its mandate from the Administration of Lands Act, 1962 (Act 123). Section 7 and 10 of the Act give the president the power to vest any stool land in the state for the benefit of the people of Ghana. This creates a trust relationship between the government and the landowners. By holding the land in trust the state vests in itself the power of alienation and the right to receive revenue accruing from the land. Again, all the incidents of ownership, including the right to sell, lease, manage, receive income, etc., exercised by customary landowners over their land are thereby transferred to the state.

However, to all intents and purposes ownership remains with the stool, skin or family and they retain the right to enjoy the benefits from the land. As holders of the beneficial interest in the land they benefit from revenue from the land. All revenues accruing to the property are disbursed in accordance with Article 267 Clause 6 of the 1992 Constitution. Again, unlike the case of public land acquisition, no compensation is required to be paid in the case of vesting of lands in the State. Vested land is managed in the same way as Public/State lands. Hence, both the state

and vested lands are generally referred to as public lands.

Various influences have led to lands being vested in the state at different times. Toulmin et al (2004) giving the idea of the different times in a Memorandum for Ghana Land Administration Project state thus;

> "Much of the North was vested under the colonial regime (in part, at least, as a means to protect the North from the fate experienced in the South, where speculation was rife and land markets disadvantaged the poor). Elsewhere, more overtly political considerations were involved, as in the decision of the Nkrumah regime in 1958, after its conflict with the chiefly-backed NLM opposition movement, to vest the lands of the Asantehene (the Golden Stool) covering much of Ashanti, Brong-Ahafo, and those of the Okyenhene of Akyem Abuakwa. In other areas, lands have been vested in an attempt to neutralise local disputes, as in the case of Twifo Hemang stool lands in the Central Region."

The above indicates that the reasons for vesting differ in different cases and include the following:

- Prevention of land speculation- Example; some areas in Northern lands;
- Political decision- Example; Kumasi Town Lands- Part 1 Lands in Kumasi which is one mile radius from the Kumasi fort (Now Armed Forces Museum) and Sunyani lands;
- Chieftaincy and land disputes and allegiances- Examples; Sunyani in the Brong Ahafo Region, Twifo Hemang Stool lands in the Central Region and Nkawkaw in the Eastern Region;
- Protracted litigation- Examples; Effutus and Gomoas; and
- proper and orderly town and country planning- Example; New Juabeng lands

In Kumasi, lands vested in the government are the Part 1 lands or the Kumasi Town Lands (Kumasi Town Boundary Ordinance 1928 (CAP 143)) and these were vested by the Colonial leaders. These lands are managed and administered by the Ashanti

Regional Lands Commission, on behalf of the Government of Ghana and in trust for the Golden Stool and the Kumasi State. Vested land constitutes about 34% of the lands in Kumasi. (*Source: Lands Commission (Kumasi), 2011*).

2.4 Land Tenure in Ghana

Tenure comes from the French word "tenir" which means holding. Thus, land tenure simply means land holding. The term according to Kasanga (1988) constitutes *"the various laws, rules and obligations governing the holding and/or ownership rights and interests that are exercised or left dominant in the use of development and transference of land".* In the view of Renne (1947), land tenure is a

> "broad term covering all those relationships established among men that determine their varying rights in the use of land. It deals with the splitting of property rights of the various owners, between owner or occupier and creditor, and between private owners and the public."

Land tenure systems embody the holding and/or ownership right to use or dispose of use rights which are recognised as legitimate and backed by statutes and government policies. These statutes come up with rules and regulations which tend to regulate the use of land, so as to ensure optimum use of it.

2.4.1 The Allodial Title

In Ghana the highest proprietary interest capable of being held in land is the *Allodial title* which is subject only to such restrictions, limitations or obligations as may be imposed by the general laws of the country. Subject to these restrictions, it confers on its owner a complete and absolute freedom to deal with the land. This allodial title in land is vested and held mostly by various stools or skins and families or clans which are the allodial owners of communal lands. The State holds land only by acquisition from these traditional allodial owners. Thus, the allodial title is held by

traditional land owning groups, the State and in limited cases individuals. The Memorandum to the Land Title Registration Law, 1986 (PNDC Law 152), page iv states:

> "The best of these interests is the allodial title which is the full title to land beyond which there is no superior title. It is an interest which, in some traditional areas in Ghana, is acknowledged as being held or vested in its stool or skin. In other traditional areas, this interest is acknowledged to be held by subgroups (stools, substools, clans and families as well as individuals)."

The above statement indicates that individuals in some parts of the country can hold the allodial title though it is rare. This title or interest can be transferred from one owner to the other through compulsory acquisition by the state, purchase by another community or an individual or gift to another community or an individual. Other lesser interests that flow out of the allodial interest include the usufructuary or the customary freehold, tenancies, pledges and easements.

2.4.2 The Usufructuary Interest and the Common Law Freehold

a) The Usufructuary Interest

The usufructuary interest also known as customary freehold or determinable interest is a lesser interest in land held by members of the allodial group. These members may either be subjects of a stool/skin or members of a family or clan. The usufructuary interest is acquired as of right by reason of the person being a member of the allodial interest group- a stool or a member of a family.

In the past, a subject of a stool or a member of a family in the exercise of this inherent customary right could move to any unoccupied land to till and build and as such retains possession of it (Da Rocha and Lodoh, 1999). In recent times, however, due to rapidly increasing population and urbanisation, it has become necessary to ensure a more equitable distribution of available land for cultivation and subjects are

limited to a demarcated area that the allodial owner specifies. It has therefore become the practice that members usually document their respective titles to land.

The usufructuary interest goes with the right of exclusive possession, the right of inheritance, right to relinquish interest by sale, lease, mortgage or pledge or to grant agricultural tenancies but the recipient is obliged to recognise the superior authority of the stool and to perform customary services to the stool/skin.

This interest prevails against the whole world including the allodial title, which gave birth to it. It is held perpetually on condition that the person acknowledges the superiority of the allodial title owner and performs customary services required of him. It can only be forfeited on the following grounds:

i. In the event of the customary freeholder dying intestate without an heir;
ii. It is proved beyond reasonable doubt that the freeholder has abandoned the land;
iii. When there is an adverse claim and the freeholder refuses to recognise the title of the allodial owner, for instance when he refuses to perform customary services or acknowledges that the land occupied by him is owned by another stool or family;
iv. When there is compulsory acquisition of the land in question by the state; and
v. When the land is sold or is given as a gift to another person by the customary freeholder/usufruct, of course with the consent of the allodial owner.

b) The Common Law Freehold

This is an interest in land acquired through a freehold grant made by the allodial owner, either by sale or gift. The holder of a customary law freehold can create a

common law freehold through a grant to another person out of his interest. This grant requires the parties to agree that their obligation and right under such a grant will be regulated by common law and that common law rules will govern any dispute that may arise over the land.

However, the 1969 Constitution abolished the non-Ghanaian's right to hold such an interest in any land, hence, those who were holding such rights prior to 1969 had their interests automatically converted to 50 year lease terms. The 1979 Constitution also brought a new dimension to it. It further abolished the granting of a Common law freehold interest out of Stool or Skin lands to either a Ghanaian or non-Ghanaian. The above issues have been repeated in the current 1992 Constitution (Article 266 (1-5) & Article 267 (5)). The above indicates that currently, no person whether Ghanaian or non-Ghanaian can hold any Common law freehold in a Stool or Skin land. This implies that, it is only with family lands that a common law freehold interest can be created and granted.

2.4.3 Derived Interests

Other interests of various durations and quality can be derived from the above-mentioned interests in land. They include the following:

2.4.3.1 Leases/Subleases and Assignments

a) Leases/Subleases

These are rights granted to an individual, group of people or a corporate institution to use a particular parcel of land for a specified term subject to the observance of express and implied covenants. These rights can be derived from the allodial title, usufructuary interest or common law freehold interest. A lessee can further grant a

Sub-lease which is of lesser term out of the interest he holds to another person but with the consent of the lessor.

According to the Operational Manual of the Lands Commission (20th July, 2004), the maximum terms of the lease depend on the various uses to which the proposed land/plot is to be put to. These are as follows; Residential (99 years but for Non-Ghanaians, 50 years), Commercial/Industrial/Civic/Cultural (50 years), Educational/Religious (50 years), Petrol Filling Station (21 years). For Agricultural; Annual crops (10-14 years), Perennial crops/Cash crops (50 years), Poultry (10 years), Livestock (21-50 years), and Ranching (50 years). At expiry, the lessor is entitled to the reversion- i.e. when the lease term comes to an end, the land and any developments thereon reverts to the lessor though subject to renewal on fresh conditions.

b) Assignments

Section 45 (1) of the Conveyancing Decree, 1973 (NRCD 175) defines assignment as "the transfer of the residue of a term or interest created by lease". The one assigning his interest in the land is referred to as the Assignor while the one the interest is being transferred to is known as the Assignee. Here, the Assignee "stands in the shoes of the Assignor" and so acts as if he/she is the lessee. The Assignee continues to observe and perform all the covenants, agreements and conditions contained in the head lease which the lessee (now Assignor) was to observe and perform.

2.4.3.2 Other lesser Interests

Other lesser interests include tenancies, pledges and easements. *Tenancies* are

usually share-cropping contractual arrangements by which the tenant farmer gives a specified portion of the produce of the farm to the landlord at each harvest time. This lesser interest in land can be created out of the allodial title, customary freehold or common law freehold. The two best known of such tenancies are the Abunu and Abusa. *"There are other forms of customary tenancies in which the consideration for the grant is not the sharing of the produce of the farm, the subject matter of the grant at the harvest time but money for seasonal or yearly tenancy"* (Dadson, 2006).

Pledges are the delivery of possession of land or other property by debtor to creditor to hold and use until the debt is paid or the obligation is discharged. In addition to these interests, certain rights recognized by law also exist in land in Ghana. Examples are easements, profits a prendre, reversions and licenses. Licences and profits a prendre are well known among the patriarchal farming communities of Upper East region for a very long time where farmlands are given out freely without rent payments to others until required. For example, gravels are also collected for building projects on farmlands provided one undertakes to cover up excavations with soil.

2.5 The Concept of Land Management

Land management is the judicious and sustainable use of land resources taking into consideration all social and economic issues. Karikari (2006) defined land management as "*the process of managing the use and development of land resources in a sustainable way*". In other words, it is the conscious effort to put land resources of an area into good and judicious use either through conservation or preservation, or both. It can therefore be inferred that sustainability is inherent in land management, hence, the need for sustainable land management.

2.5.1 Sustainable Land Management

Sustainable Land Management (SLM) is defined as the *"integration of technologies, policies and activities in the rural sector, particularly agriculture, in such a way as to enhance economic performance while maintaining the quality and environmental functions of the natural resource base"* (Dumanski, 1997). Cornforth (1999) also defined Sustainable Land Management based on five objectives adopted by the Food and Agriculture Organisation of the United Nations as the basic pillars on which sustainable land management must be developed:

- maintain and enhance productivity;
- decrease risks to production;
- protect the potential of natural resources and prevent the degradation of soil and water quality;
- be economically viable;
- be socially acceptable.

To Cornforth (1999), the above-mentioned objectives are the foundation upon which sustainable land management is built. The World Bank (2006) defined Sustainable Land Management as a *"knowledge based procedure that integrates land, water, biodiversity, and environmental management to meet rising food and fibre demands while sustaining livelihoods and the environment."*

The central aim of SLM is to ensure that land resources currently being used are also maintained for the benefit of society in the future. There are currently only a few countries in the world that still have spare land resources to meet the needs of their expanding populations. In the majority of cases, production must be increased and intensified on land already under cultivation. In most developing countries, the majority of people are still engaged in primary agriculture, livestock production,

forestry and fishery, and their livelihood and options for economic development are directly linked to the quality of the land and its resources (World Bank, 2006). To that end, Sustainable Land Management (SLM) is becoming an urgent necessity in recent times. This is because the development of sustainable land management practices is central to the issues of food security, poverty alleviation and protection of the environment.

However, rapidly increasing human population and economic activities are placing much more pressure on land, creating competition and conflicts to the access and use of this life-supporting resource. Sustainable and productive land management systems are essential if we are to continue to meet the material needs of the world's population. To ensure the above, a number of countries and international organisations have begun to rely on sustainable land management techniques. For example, international publications such as 'Our Common Future' in 1987, the 'Rio Declaration' and 'Agenda 21' in 1992, and the 'Johannesburg Declaration' in 2002, have created recognition that concerted efforts are needed to develop sustainable land use practices to minimise further harm to natural resources and biodiversity (Mitchell et al, 2003).

One of the key ways to improved land management practices is creating an environment where land users understand the implications of poor land management practices, the recommended best practices for their land holding, and the benefits in adopting these recommended best practices. It is also acknowledged that sustainable land management can best be pursued if it is developed at the lowest possible level involving all stakeholders in decision making (Pieri, 1997).

2.5.2 Institutional Framework for Sustainable Land Management & Administration in Ghana

A number of state institutions perform functions relating to land administration and management. The management of lands in Ghana is entrusted to certain institutions with the requisite skills and these include:

- Lands Commission which has four specialised divisions;
    - Public and Vested Land Management Division
    - Survey and Mapping Division
    - Land Valuation Division
    - Deed and Title Registration Division
- Town and Country Planning Department
- Customary Lands Secretariats
- Metropolitan/District Assemblies

2.5.2.1 Lands Commission

The Lands Commission was first established under the 1969 Constitution charged with the responsibility of holding and managing on behalf of government all lands acquired or vested in the president. Since then it has been reformed with changes in constitutions, laws and decrees. The primary function of managing public lands has however, remained unchanged. The Lands Commission now operates under the Lands Commission Act, 2008 (Act 767) which has replaced the former Lands Commission Act 1994 (Act 483). This new Act, Act 767 has merged four land agencies into one with four (4) divisions. These include Public and Vested Land Management Division (former Lands Commission), Survey and Mapping Division (former Survey department), Land Valuation Division (former Land Valuation

Board), and Land Registration Division (former Land Title Registry). Article 258 (1) and Act 767 (5) of the 1992 Constitutions and Lands Commission Act, 2008 respectively, among others, spell out the functions of the Lands Commissions as follows:

a) facilitate the acquisition of land on behalf of Government;
b) advise on, and assist in the execution of, a comprehensive programme for the registration of title to land throughout Ghana;
c) register deeds and instrument that affect land throughout the country;
d) establish standards for and regulate survey and mapping of the country;
e) provide land and related valuation services;
f) in collaboration with other bodies instil order and discipline into the land market through curbing the incidence of land encroachment, unapproved development schemes, multiple or illegal land sales, land speculation and other forms of land racketeering;
g) impose and collect levies, fees, charges for services rendered; and
h) perform such other functions as the Minister responsible for lands and natural resources may assign to the Commission.

Each of the four divisions perform specialised but inter-dependent roles, all tailored towards sustainable land management.

I. Public and Vested Land Management Division (PVLMD)

Act 767 (23) provides for the function of this division to include:

a. to facilitate the acquisition of land for Government;

b. managing state acquired and vested lands in conformity with approved land use plans; and

c. other functions determined by the Commission.

The main functions of the PVLMD as a division under the Lands Commission is therefore to manage state acquired and vested lands which includes river catchments

and watersheds, and it does this in co-ordination with the relevant public agencies and governmental bodies.

II. Survey and Mapping Division (SMD)

This division, formerly Survey Department was established in 1901 as the Mines Survey Department by the colonial authorities to provide survey services to facilitate the grant of concessions for the exploitation of gold and other mineral resources. The division draws its mandate from the Survey Act, 1962 (Act 127). Its specific functions according to Act 767 (20) include supervising, regulating and controlling the survey and demarcation of land for the purposes of land use and land registration and coordination of the production of plans from the data derived from survey and any amendment of plans. Inadequate funding and trained staff and equipment have persistently plagued the division which has led to the slow preparation of base maps.

III. Land Valuation Division (LVD)

This division, formerly known as the Land Valuation Board was established in 1986, pursuant to Section 43 of PNDC law 42. Generally, the Land Valuation Division provides valuation services to the government of Ghana and the public sector for statutory and non-statutory purposes. Its other functions as specified under Act 767 (22) of Lands Commission Act, 2008 include the assessment of compensation payable upon acquisition of land by the government and assessment of stamp duty. The division's main constraints include the severe shortage of qualified staff; lack of logistic support and vehicles, low staff morale, poor remuneration and government delays in the payment of compensation.

IV. Land Registration Division (LRD)

This division is the merger of the former Deed Registry and Land Title Registry. Its functions according to Act 767 (21) include registration of title to land and other interests in land, registration of deeds and other instruments affecting land in areas outside compulsory title registration districts, and maintaining land register that contains records of land and other interests in land. Unfortunately, the division lacks adequate funds and resources, and has also suffered from personnel and logistical problems.

Quite apart from problems that the various divisions are beset with, generally, the Lands Commission is plagued with problems which tend to impede the smooth performance of its operations. There is a shortage of trained and motivated staff, frequent political interference, lack of basic logistics and support services, and poor remuneration and incentive packages and low morale.

2.5.2.2 Town and Country Planning Department

The Town and Country Planning Department is one of the departments decentralized under the District Assemblies as is required by the Local Government Act, 1993 (Act 462). The department is responsible for physical planning and is empowered by the Town and Country Planning Ordinance, 1945 (CAP 84) to undertake the preparation of planning schemes and formulate policies for its implementation and enforcement. It is also ensures an orderly development of the society for the safety, health, and convenience of all the people in the society. Section 23 of Cap 84 provides that, where an area has been declared a Planning Area the department has the power to remove, pull down or alter any building or other works that do not conform to the provisions in the Ordinance.

The Department is however constrained with severe shortage of vehicles for field work, shortage of qualified middle level technical staff, shortage of office accommodation, and lack of adequate base maps for planning and poor remuneration packages.

2.5.2.3 Customary Lands Secretariat

In Kumasi, the Customary Lands Secretariat is known as Asantehene's Lands Secretariat which is located at the Manhyia Palace. It plays a major role in the management of stool land in Kumasi and links up with the Lands Commission in the performance of its functions. All grants of stool lands require the consent of the Lands Commission. Article 267 (3) states:

> "There shall be no disposition or development of any stool land unless the Regional Lands Commission of the region in which the land is situated has certified that the disposition or development is consistent with the development plan drawn up or approved by the planning authority for the area concerned."

Every grant of stool land in Kumasi should receive the Asantehene's endorsement. In Kumasi, Stool lands constitute the majority- about 66% *(Source: Lands Commission (Kumasi), 2011)* and therefore come directly under the management of the Secretariat. One of the problems with this institution is that the endorsement usually takes considerable time, especially when the Asantehene travels. These delays coupled with the relatively high "drink money" to be paid sometimes discourage developers to continue the lease processing.

2.5.2.4 Metropolitan/District Assemblies

District Assemblies have been created since 1988. The Local Government Act 1993 (Act 462) provides the institutional and legal framework for District, Municipal and

Metropolitan Assemblies, giving them executive and deliberative powers, to plan for the overall development of districts. The Act at Section 49 (1) empowers the District Assemblies to regulate and control development in their area of jurisdiction through the granting of written permit. Section 55 of the Act even empowers the Assemblies *"without prior notice, effect or carry out instant prohibition, abatement, alteration, removal or demolition of any unauthorized development carried out or being carried out that encroaches or will encroach upon a community right of space, or interferes or will interfere with the use of such space."*

In Kumasi, this authority is the Kumasi Metropolitan Planning Authority, established on 8th February, 1989, by the Local Government (Kumasi Metropolitan Assembly) (Establishment) Instrument 1989-LI 1432. The authority is responsible for the making of planning schemes (Section 46(2)), issuing of planning and building permits (Section 49); and the making of building bye-laws within the scope of national building practices (Section 62).

The Metropolitan Assembly is, however, plagued with setbacks which include lack of adequate skilled manpower, inadequate funding, inadequate logistics, weak management capacity, and mistrust between Assembly and traditional authorities. These constraints are real and have a telling effect on the effectiveness of District and Metropolitan Assemblies.

2.6 Land Registration in Ghana

2.6.1 Deeds Registration

The history of land registration systems dates back to the colonial times. Until 1962, the Land Registry Ordinance of 1895, which replaced the Registration Ordinance, 1883, remained the law governing the registration of deeds throughout Ghana except

in the Northern and Upper regions (Arko-Adjei, 2005).

The Land Registry Act, 1962 (Act 122) provided for the registration of all instruments affecting land. Registration constituted notice to the whole world and without registration an instrument affecting land was of no effect. Except for judges' certificate, the law required all instruments to be registered, and should include a plan or map with the description of the land. The purpose of this registration was to record the documents to the land which was being registered. The deeds registration only helped in cases of conflict of priority of instruments. In other words, it was only for the purposes of evidence of which instrument was registered first and does not confer title. The system of deeds registration was found to be deficient in ensuring security of title as it did not confer title on the person in whose name the deed was registered (Sittie, 2006).

2.6.1.1 Challenges of Deeds Registration

Deeds registration was characterised by certain deficiencies which included the fact that there was complete absence of statutory warranty of title. Even though registration of instrument was deemed to constitute notice to the whole world, the fact that a deed had been stamped and registered was no proof of absolute title to the holder of the instrument or deed.

Again, registration of interests was done with inaccurate maps or plans. Most plans attached to the deeds were more descriptive in nature because lands were not properly surveyed and demarcated, and these inaccurate plans or maps often created conflicts among land owners.

Moreover, deed registration led to multiple registrations for the same piece of land because registration was based on the deed and not on the land. There was

no system to detect multiple registration of the same piece of land in the registration process. The Land Title Registration law, 1986 (PNDC Law 152) was then introduced to correct these deficiencies.

2.6.2 Title Registration

The challenges arising from registration of instruments under the Land Registry Act, 1962 (Act 122) led to the promulgation of the Title Registration Law 1986 (PNDCL 152) which would be an improvement on the registration of deeds. The Memorandum to the Land Title Registration law, PNDC Law 152 summarised them this way:

> "Systematic research in Ghana has revealed radical weaknesses in the present system of registration of instruments affecting land under the Land Registry Act, 1962 (Act 122). The chief among them being litigation, the common sources of which are the absence of documentary proof that a man in occupation of land has certain rights in respect of it. The absence of maps and plans of scientific accuracy to enable the identification of parcels and the ascertainment of boundaries and the lack of prescribed forms to be followed in case of dealings affecting land and interests in land."

The Law provided for accurate parcel or cadastral maps which would reduce fraud, multiple registrations and reduce litigation. Title certificates issued was indefeasible and can only be cancelled by a court of law.

The Land Title Registration Law provides for the registration of all interests held under both customary and common law. Under this law, the registrable interests include the allodial title, usufructuary or customary law freehold, Common law freehold, leaseholds, customary tenancies, and mineral licences.

It must be noted that presently, there are two statutory legislations governing land registration in the country: the Land Registry Act, 1962 [Act 122] and the Land Title Registration Law, 1986 [PNDCL152].

2.6.2.1 Processes Involved In Title Registration

Step 1: The applicant obtains appropriate registration forms from the Land Registration Division of the Lands Commission, completes and submits them to the Division together with copies of all relevant documents and the required registration fees.

Step 2: Upon submission of application an applicant is issued with a receipt of acknowledgment "yellow card" and a letter of request addressed to the Survey & Mapping Division of the Lands Commission for the preparation of parcel plans.

Step 3: The applicant pays for and collects parcel plans from the Survey & Mapping Division whenever they are ready and submits same to the Land Registration Division (LRD) to assist in the processing of their application.

Step 4: Meanwhile, LRD conducts a search at the Public and Vested Land Management Division. Upon receipt of the search report by LRD, and satisfying itself that there are no objections or adverse findings in the report, the Division then proceeds to publish the application in the dailies to notify the general public of such application.

Step 5: Counting from the date of publication, fourteen days notice is allowed to receive objections from interested parties who may wish to challenge the application. If no objections are received within the fourteen day period the Division then continues with the process of registration.

Step 6: The LRD prints and sign certificates, records particulars on sectional plan and notify applicants of completion of registration exercise. The Land Title Certificates are finally issued out to applicants upon submission of their "yellow cards"

2.6.2.2 Challenges of Title Registration

Land Title Registration is also beset by some problems and they include the following:

a. Conversion of Registered Deeds

Most parcel plans in the Deeds were not scientifically derived and could therefore not be physically located on the ground without the assistance of the land owner. Most of the old Deeds in the Land Registry did not have residential or postal addresses and for others their addresses have now changed. This situation therefore made it virtually impossible for the Land Title Registrar to notify Registered Deed owners of the intention to register their interests as is statutorily required, once an area has been declared a registration district.

b. Inadequate Public Education

The introduction of title registration in Ghana was not accompanied by adequate public education, even within the declared districts. Public education was mainly through the distribution of flyers and brochures, and some public lectures. However, in a country where about 42.1% of the population of age 15 and over is illiterates (Ghana Statistical Service, 2010), there is the need for intensive, extensive and sustained public education in the major local languages within the registration districts. Consequently, title registration has been rather slow and has not been extended country wide.

c. Lack of Cooperation Among Land Agencies

There is always some amount of resistance to change on the introduction of major policies. The introduction of title registration was no exception. Its implementation was perceived by some agencies as taking over some of their traditional roles. The needed cooperation from such agencies was therefore not forthcoming. Access to

vital records on land ownership from these agencies was therefore very difficult, leading to the situation where a person had title to the land while another person had a registered deed to the same land.

2.7 Land Use Planning

The Canadian Institute of Planners offers the following definition: *"Land use planning means the scientific, aesthetic, and orderly disposition of land, resources, facilities and services with a view to securing the physical, economic and social efficiency, health and well-being of urban and rural communities"* (Wikipedia Encyclopedia, last modified 15:54, 24 September 2007). It can therefore be inferred from the above that land use planning is an important part of social, economic, environmental and welfare policies, thus, ensuring that land is used efficiently for the benefit of the wider economy and population as well as to protect the environment.

Land use planning process involves deciding if applications for changes to land use or development are consistent with suitable land use broadly classified in the planning scheme. To reflect the increasingly changing modern society needs, periodic revision of the process of land use planning are needed to ensure that unsuitable land use practices are prevented.

In Ghana, at the apex of national development planning systems is the National Development Planning Commission (NDPC), generally charged with the responsibility for ensuring consistency and continuity in the framing and execution of development policy for the entire country. The Commission draws its mandate from the National Development Planning Commission Act, 1994 (Act 479) and that of the National Development Planning (Systems) Act, 1994 (Act 480).

The Commission carries out the above functions in collaboration with relevant agencies who help monitor physical planning and development to ensure their conformity with the approved development plan. These agencies are also empowered by various enactments and legislative instruments to make bye-laws and regulations to regulate and supervise development in their areas of jurisdiction. The District Assemblies work in close collaboration with agencies such as Town and Country Planning Department, Land Commission and Office of Administrator of Stool Land.

Sustainable land use plan calls for the use of development controls including land use zoning, planning and building permits to ensure proper monitoring of developments in the country.

2.7.1 Land Use Zoning

To ensure proper monitoring of developments, there must first be land use zoning. This is where planning schemes are prepared that shows which part of land is to be used for a particular use, e.g. housing, leisure, industrial, commercial, residential, cultural, educational, etc. To come out with a planning scheme of an area, a base map is first prepared by a qualified Land Surveyor usually from the Survey & Mapping Division of the Lands Commission. This base map gives detailed description of the land such as existing buildings and streams or rivers. It also gives a detailed description of the topography of the land be it a lowland, highland, valley, undulating and other physical features.

After the base map has been prepared, the planner, based on the map prepares a planning scheme. This usually shows the uses to which the land is to be put. Thus, specific places to be used as residential, educational, commercial,

sanitary, natural reserves, etc are all identified in the planning scheme which has to be approved by the Metropolitan, Municipal or District Planning Committee. It is based on this that development permit is usually given since the proposed development plan of the applicant is checked to see whether it conforms to the use of the area (i.e. planning scheme).

2.7.1.1 Planning and Building Permits

a) Planning Permit

According to the Town and Country Planning Ordinance, 1945 (CAP 84), development of land comprises the following: construction, demolition, alteration, extension, repair or rehabilitation of any building, or change of use. It is therefore required that any proposed development conforms to the general zoning on the approved scheme/layout.

Any developer who intends to develop any site approved in a planning layout should submit an application to the Town and Country Planning Department for an appropriate development permit to be granted. In accordance with regulation 3 of LI 1630 of the National Building Regulation, an applicant is required to attach a certificate of title, confirming his/her title to the site on which the development is proposed from the Lands Commission. In the case of Kumasi, the application is then submitted to the Kumasi Planning Committee (KPC) for consideration and approval. A submission fee is paid and receipt thereof collected. Upon submission of application to the KPC, it then refers the application to its technical sub-committee for consideration. The considered application is then recommended to the KPC for granting or refusal. In case of refusal, the grounds for the refusal need to be stated. If the decision is favourable, the KPC then grants the development permit either

conditionally or unconditionally. When application is granted conditionally, the KPC states the conditions upon which the permit is premised.

When the planning permission is granted, the proposed developer is informed, through a letter, to contact the Engineering Department of the Assembly for an appropriate building permit to be issued.

b) Building Permit

The building permit gives the developer the permission to put up a structure or structures in a stipulated site. An application for building permit should comprise an 'application form' in the form of a building jacket and 3 sets of architectural and/or structural plans of the proposed development, properly endorsed by a registered architect or licensed building surveyor as the case may be and structural engineer in the case of buildings which have structural considerations.

On receipt of the letter, the Development Control Officer (DCO) refers the application to a Site Inspector who conducts site inspection and reports to the DCO. The DCO then assesses the application for the payment of development charge or statutory fee. Upon payment of the statutory fee, the application is recommended to the Metropolitan Engineer for endorsement and further recommended to the Metro Director of health for endorsement. The Metropolitan Chief Executive is the final signatory to the permit which is then ready for collection.

According to Kasanga (1988), "*the customary owners - stools, clans, families, and tendamba, who hold the allodial title, own about 78 percent of the total land area in Ghana".* This shows that a bulk of land in Ghana is in the hands of traditional leaders. One problem that seems to be affecting the granting of building permit is the fact that in most of the cases, development precedes planning where

people develop even before they secure building permits. This may partly be blamed on some traditional leaders who apportion and allocate plots without recourse to proper planning of the area. This has resulted in the high incidence of developments taking place without proper permits since these areas do not have planning scheme covering the area.

2.7.2 Problems of Land Use Controls

There are various problems associated with the above discussed land use controls. Physical development is far way ahead of planning. Many areas in the country do not have approved planning schemes, yet developments are on-going. Hence, certain incompatible land uses exist side by side with other uses, leading to possible health hazards. The delay in the preparation of planning schemes is accounted for by the lack of manpower and modern surveying equipments/logistics to the institutions concerned to come up with the base maps and eventual preparation of planning schemes.

Again, permit approval process is also fraught with problems. Due to the non-availability of logistics and inadequate technical manpower, there is delay in the process. Many therefore find the process to be too bureaucratic and frustrating. Every planning and building permit's application needs to be considered by the Metropolitan/District Planning Committee, before the permit is finally granted. These meetings are chaired by the Metropolitan/District Chief Executive (MCE) who most often are bogged down with other pressing duties of the Assembly. As a result, the MCEs/DCEs are often unable to attend the meetings. The problem with this is that Committee meetings are not held regularly and these tend to slow down the permit process. This has led to the springing up of developments in the Kumasi

Metropolis and districts without prior approval from the Committee. This is because, legally, according to the National Building Regulation (LI 1630), after the 90th day from the date of submission of the application, if nothing is heard from the Committee, it is assumed that consent has been given and the developer can go ahead to undertake his development.

Furthermore, the title registration process is characterised by cumbersome procedures, delays, frustrations, high cost et cetera and this has led to the outright evasion of titling by some prospective developers. As noted by Arko-Adjei (2005) "*about 80% of total land area of Ghana, which comprises of the customary lands, has not been registered. The government and other land users do not have formal information about the occupation. Ownership and other rights on land are only situation on the ground but not on paper"*. This among others explains the reason for the difficulty in controlling development in the country.

2.7.3 Unauthorised Development in the Kumasi Metropolis

Kumasi and its neighbouring districts have expanded to engulf settlements previously outside the limits. However, these dimensions of growth over the years, especially the past decade, have been characterised by alarming incidences of uncontrolled and unauthorized developments and encroachment despite the introduction of regulatory management of development (Adarkwah & Post, 2003).

Kumasi currently experiences numerous physical development problems. Most of the site reservations for public/community facilities provided by approved plans, such as schools, open spaces, markets and sanitary areas have been encroached upon with impunity. These sites have been sub-divided, allocated and developed mainly for private residential purposes. Examples are site for garages at

Santasi, Kumasi Girls Secondary School at Abrepo, Osei Kyeretwie Secondary School at Tafo, and many more.

Major drainage channels of the Metropolis as well as approved natural conservation areas have been encroached upon by residential buildings. These drainage channels in the metropolis where encroachment is prevalent are Aboabo, Sisa, Subin, Kwadaso/Suatam and their tributaries which run on the outskirts. This situation has resulted in a high incidence of choking and careless diversion of natural water course.

Some large expanses of low land assessed to be physically unsuitable and uneconomical for building and designated in approved planning schemes as nature reserves or public parks have been massively encroached upon and developed mainly for residential uses. Example of these areas include the Atonsu 'S' line and east of Ahinsan/Kaase industrial area located along the Aboabo stream, the area south of Adiembra (TUC)/Odeneho Kwadaso which is along the Kwadaso Suatam stream and the stretch of land along the Aboabo stream.

The City's road corridors are choking with haphazardly erected structures used for various and varied unapproved purposes and activities. Kiosks and other 'temporary' structures fill the reservations for carriage way expansion, pedestrian walkways and infrastructure service lines. All the major arterial roads, Kumasi-Accra, Mampong, Offinso, Sunyani, Obuasi as well as the ceremonial roads are filled with unauhorised structures.

All these show the extent and magnitude of unauthorised developments in the Metropolis which have severe negative consequences on the efficient functioning of the Metropolis and which also make it difficult to effectively control developments in the city.

2.8 Compulsory Acquisition of Land and Compensation

Land acquisition by government for public use dates back to the colonial era. Government did not own land and therefore needed to statutorily acquire land for development purposes known in American law as the 'power of eminent domain' which is *"the right to take private property for public purposes."* The government in the exercise of this power can acquire a particular parcel of land to be used for public interest whenever it deems fit so to do.

The underlying principle of compulsory acquisition is supremacy of the state over people and their private property. It is aimed at providing land for public and social amenities, correcting economic and social inefficiencies in private market operations and providing greater equity and social justice in the distribution of land.

Lands compulsorily acquired are usually acquired for the benefit of government departments, local authorities, and para-statal departments who provide public services beneficial for the entire people of Ghana. Such lands so acquired are termed 'public lands'. The State Lands Act, 1962 (Act 125) gives the power to the president to compulsorily acquire land. Section 1 (1) of the Act states thus:

> Whenever it appears to the President in the Public interest so to do, he may, by executive instrument declare any land specified in the instrument, other than land subject to the Administration of Lands Act, 1962 (Act 123), to be land required in the public interest.

Public interest by virtue of Article 295(1) of the 1992 Constitution of Ghana includes *"any right or advantage which enures or is intended to enure to the benefit generally of the whole of the people of Ghana."* The parameters for judging if a particular acquisition is for the public interest are spelt out in Article 20(1) (a) of the 1992 Constitution and relate to "*the interest of defence, public safety, public order, public morality, public health, town and country planning, or the development or utilisation of property in such a manner as to promote the public benefit."*

According to Knight (2007), compulsory land acquisition and compensation could be properly followed if the following four basic principles are adhered to:

i. Protection of due process and fair procedure**:** This is to ensure that individuals' claims and concerns are heard and that there are checks on state power.

ii. Good governance: This is to uphold land tenure security and maintain the rule of law.

iii. Pragmatism: This stresses on the fact that laws should balance the protection of due process with the capacity of the government to act. Laws should be financially feasible, and should not be too complex or time consuming. If they are, the acquiring authority may not implement them at all.

iv. Equivalent compensation: Affected owners and occupants should not be left in a worse situation than before their land was taken.

The above principles show that it will be naturally unjustifiable if someone is expropriated of his right which is not in accordance with well-laid down rules and procedures.

The legal framework for acquisition of public land in Ghana therefore incorporates the above four (4) basic principles. To conform to the rules of natural justice, the 1992 Constitution of Ghana in Article 20 (2) provides that:

> Compulsory acquisition of property by the State shall only be made under a law which makes provision for-
> (a) the prompt payment of fair and adequate compensation; and
> (b) a right of access to the High Court by any person who has an interest in or right over the property whether direct or appeal from any other authority, for the determination of his interest or right and the amount of compensation to which he is entitled."

The legal framework for compulsory acquisition of land and compensation payments by the state is examined below.

2.8.1 Pre-Independence Legal Framework for Compulsory Acquisition

The colonial regime (1850-1957) adopted two main policy instruments for accessing land in the Gold Coast (Ghana). These were expropriation (compulsory acquisition with compensation) in the colony and Ashanti, and appropriation (compulsory acquisition without compensation) in the Northern Protectorate (now Northern, Upper East and Upper West Regions) (Larbi et al, 2004). The colonial government achieved this through legislations that regulated land acquisition by the State for public use.

a) Public Lands Ordinance, 1876 (Cap 134)

This law provided for the acquisition of land and subsequent vesting by the government to be used for public purposes. Compensation under the Ordinance was paid after a rigorous examination and validation of claims. This law was however repealed after independence by Section 26 of the State Property and Contracts Act, 1960 (CA 6).

b) Ashanti Administration Ordinance, 1902 (Cap 110)

This Ordinance empowered the Crown to acquire and own land in the public interest free from all encumbrances with reference to Ashanti lands. It also ensured the protection of water resources. The acquisition of the catchment area of Owabi River was done based on Section 29 (3) of this Ordinance. It is important to note that before 1901 Ashanti did not form part of the Gold Coast and therefore could not have been affected by CAP 134. The Ordinance also made it possible for the acquisition of lands along major roads which fall within certain specific measurement, usually within 300ft from the middle of the road. The Ordinance was

however repealed by schedule 1 of Statute Law Revision (Amendment) Act, 1963 (Act 215).

c) Administration of Northern Territories Ordinance, 1902 (Cap 111)

Like Ashanti, Northern Ghana was not part of the Gold Coast until 1902. This Ordinance put all the lands of the protectorate, whether occupied or not under the control and subject to the disposition of the Governor, to be held and administered for the use and common benefit, direct or indirect, of the natives (Larbi et al, 2004). The effect of this policy was to effectively nationalise the Northern lands and to give the colonial administration unfettered access to land (Larbi et al, 2004).

The Ordinance did not make provision for compensation. A mere notice with the inscription 'taken for government' was sufficient to vest the land in the Crown and to extinguish all existing rights in the land without any compensation. This Ordinance was repealed after independence and came under schedule 1 of Statute Law Revision (Amendment) Act 1963 Act 215.

d) Town and Country Planning Ordinance, 1945 (Cap 84)

This Ordinance provides the legal mechanism for physical development planning in this country and it was the first to recognize planning as a major function of government. Section 27 (1 & 2) of the Ordinance provides the grounds for compulsory acquisition of land to pave way for the carrying out of provision of a scheme and due compensation to be paid to the parties whose properties are affected by the acquisition. Section 29(4) disallows the payment of compensation in some cases such as any provision which prohibits the use of land for a purpose likely to involve danger or the injury to health, or detriment to the neighbourhood.

e) Public Lands (Leasehold) Ordinance, 1952 (Cap 138)

This law paved the way for the acquisition of land compulsorily for the public to be used for a particular number of years free from all encumbrances. Thus, the government holds leasehold interest of the land so acquired upon payment of compensation (in the nature of payment of annual rent) to the land owners. The reversionary interest in such lands was vested in the indigenous owners. However, upon agreement between the government and the landowners, the term of years could be extended. This law was repealed by Section 26 of the State Property and Contracts Act, 1960 (CA 6).

2.8.2 Post-Independence Legal Framework for Compulsory Acquisition

After independence and in modern times, lands in Ghana can be acquired by the state under any of the following legislations:

1. State Lands Act, 1962 (Act 125)
2. Administration of Lands Act, 1962, (Act 123)
3. The Land (Statutory Wayleaves) Act, 1963 (Act 186)
4. Public Conveyancing Act, 1965 (Act 302)
5. State Property and Contracts Act, 1960 (CA 6)
6. 1992 Constitution of Ghana

a. State Lands Act, 1962 (Act 125)

This is the main instrument of compulsory acquisition in the country and remains so to this day. The State Lands Act, 1962 (Act 125) empowers the President, where it is in the public interest to declare any land for public use and to vest it in himself and on behalf of the Republic free from any encumbrance upon the publication of an

executive instrument in the gazette. Section 1(1) of Act 125 states:

> "Whenever it appears to the President in the public interest so to do, he may, by executive instrument declare any land specified in the instrument... to be land required in the public interest."

By this Act, the publication of an Executive Instrument is enough to extinguish all subsisting rights and interests in the land and vest the land in the President absolutely and free from all encumbrances. Lands acquired under this Act have both their legal and equitable interests vested in the President.

Provision is made for the payment of compensation to all those interests adversely affected by the declaration. However, where it is deemed necessary, land of equivalent value may be offered as compensation. Section 4 of the Act states that claims of Compensation shall be made within 6 months (as amended by State Lands (Amendment) Decree 1979, AFRCD 62) from the date of publication of the declaration after a written request by the acquiring body or institution is made to the Minister. Section 4 (3) provides among other things that; the Minister may, having regard to *"the market value or the replacement value of the land, the cost of disturbance or any other damage suffered thereby",* assess compensation in respect of that land or make an offer of land of equivalent value.

The above indicates that the issue of compensation is to be dealt with after the expropriated land had been vested in the president. Compensation payments thus become a separate issue consequent to the acquisition and not as part of the process. Its non-payment does not invalidate the acquisition. One major defect of the law is that since the law does not require prompt payment of compensation, many of the acquisitions have been made without the payment of the requisite compensation to the expropriated owners. This among other things has created a situation of discontentment among present generation of indigenes whose lands were acquired

for various development projects in the "public interest". Thus, many of these lands have now become the subject of encroachment engineered by indigenes of those lands.

Another defect of this law is that it does not require consultation of the land owners. They are just entitled to notice prior to acquisition. This has seriously affected state-community relationships in the country.

The State Lands Act has been used extensively by the State to acquire land for public bodies such as government ministries and departments, corporations etc. Examples include the Aboadzi-Site for Takoradi Thermal Project, 2005 (E.I. 2), Kpong – Site for Water Works Expansion Project, 2004 (E.I. 18), Barekese-Site for Dam and its catchment area for Ghana Water Company Limited Instrument, 2001 ((EI 23), Kumasi - Site for Osei Kyeretwie Secondary School), 1998 (EI 18), etc. An amendment to the State Lands Act (Decree 1968, NLCD 234) also makes it possible for Stool lands or lands that are subject to Act 123 to be compulsorily acquired.

b. Administration of Lands Act, 1962 (Act 123)

The Administration of Lands Act, 1962 (Act 123) was enacted to consolidate with amendments the enactments relating to the administration of stool and other lands including the Kumasi Town Lands. This Act gives the President the power to vest any stool land in the State for the benefit of the land owning community. Section 7(1) states*:*

> "where it appears to the President that it is in the public interest so to do, the President may, by executive instrument, declare any stool land to be vested in President in trust and accordingly the President may, on the publication of the instrument, execute any deed or do an act as a trustee in respect of the land specified in the instrument".

This indicates that the President can regulate the use and occupation of land by

vesting the legal title to land in himself while the equitable/beneficial title remains with the stools or the owners. There is therefore a trust relationship between the government and the landowners.

This Act does not make provision for any compensation for land since lands acquired under this Act (Act 123) do not amount to total expropriation of the interests of land owners. Government only has the legal interest while the beneficial interest remains with land owners. However, the Act makes provision for the payment of compensation to all who may be adversely affected by reason of disturbance, by the authorisation given by the President (Section 10(3)). Section 7(2) also states: "*Any moneys accruing as a result of any deed executed or act done by the president under subsection (1) shall be paid into the appropriate account for the purposes of the Act.*" All revenues accruing to the property shall be disbursed in accordance with Article 267 clause 6 of the 1992 Constitution.

Lands vested under this Act are much similar to lands acquired under Act 125 in the sense that the management of both rest with the government. The only difference is that whereas the beneficial interest of lands acquired under Act 125 goes to the entire people of Ghana, beneficial interest of lands vested under Act 123 remain with the landowners.

Efutu and Gomoa Ajumako vested lands (i.e. EI 1963) and Koforidua vested lands (i.e. EI 101 1964), are examples of lands acquired under this Act.

c. Lands (Statutory Wayleaves) Act, 1963 (Act 186)

This is the main legislation for government acquisition of land for the construction of roads and provision of utilities. The Act provides for the creation of wayleaves over land to enable public utility bodies to function without much hindrance. The

President does this upon request from the Minister for specific public works. Wayleaves are created to enable public utility bodies to undertake certain activities relating to public utilities such as the construction of a highway, electricity cables, telephone lines, gas, water and sewerage pipes and transport facilities including Railway and Ports.

Statutory Wayleaves when created bring encumbrance on the land without the land being expressly acquired. Thus, Statutory Wayleaves do not debar owners of land from using the land unless the use is incompatible with the wayleaves so created. Wayleaves created enure to the benefit of the Republic of Ghana, a statutory corporation or the public generally (Section 1 (1) of Act 186).

Provision is made in Section 5(6) for the payment of compensation to any person who suffers a loss or damage as a result of the construction of the public works. Section 6(3) of the law however gives the Minister some discretionary powers in determining cases where compensation will not be paid. The most controversial of them is the provision that no compensation is payable where no more than one-fifth of a parcel of land is taken and the remaining land is still suitable for the use for which it was put before the highway was constructed.

Examples of lands acquired under this Act include Accra-Tema Water Supply Project, 1970 (EI 24), Accra-Tema Sewerage Scheme, 1970 (EI 30), Accra-Tema Motorway (Phase I), 1973 (EI 46), Kumasi-Kaasi-Site for Railway Siding), 1974 (EI 113), etc. This law has hardly been used because public land administration has not understood its provision very well and the uncertainties of the interest that is acquired.

d. Public Conveyancing Act, 1965 (Act 302)

This law empowers the President through an Executive Instrument to declare any State or Stool land to be a "selected area" which means the State takes control of the land and grants title to land in the area. This law provides an easy, fast and economical way for the government to gain access to land for re-settlement of persons affected by natural disaster or other forms of calamity. This Act provides for the payment of compensation to expropriated owners. However, this law has never been used even though the country has experienced many natural disasters since the government can acquire land through Act 125 rather than merely declaring an area as a selected area.

e. State Property and Contracts Act, 1960 (CA 6)

This law was made to vest all State properties previously held in the name of the British Monarch in the Republic of Ghana. The powers exercisable by the Crown under any Act in respect of property acquisition were vested in the President. The Act empowers the President to declare by notice published in the Gazette any property as required for Public Service and thereafter the Minister may enter into agreement with the owners for the absolute purchase of the land for a consideration (Section 4 (1 & 2). On the payment of the consideration the property so acquired becomes vested in the President. This was the main legislation for the acquisition of land by the State, however, its operation of late has not been seen.

f. The 1992 Constitution

Article 20 of the 1992 Constitution empowers the government to compulsorily acquire land for the interest of the state subject to certain conditions. Article 20(1)

states thus:

> "No property of any description or interest in or right over any property shall be compulsorily taken possession of or acquired by the State unless the following conditions are satisfied.
>
> (a) the taking of possession or acquisition if necessary in the interest of defence, public safety, public order, public morality, public health, town and country planning or the development or utilization of property in such a manner as to promote the public benefit; and
>
> (b) the necessity for the acquisition is clearly stated and is such as to provide reasonable justification for causing any hardship that may result to any person who has an interest in or right over the property.

This above indicates that land could only be acquired compulsorily only when it is to be used for the public benefit.

Article 20(2c & d) makes provision for compensation and grants permission to any person who is not satisfied with any compensation assessed to seek redress through the court. It states thus: *"Compulsory acquisition of property by the State shall only be made under a law which makes provision for the prompt payment of fair and adequate compensation; and a right of access to the High Court by any person who has an interest in or right over the property whether direct or appeal from any other authority, for the determination of his interest or right and the amount of compensation to which he is entitled."*

The Constitution makes provision for settlement of displaced persons. Article 20 (3) states that *"where a compulsory acquisition or possession of land effected by the State in accordance with clause (1) of this article involves displacement of any inhabitants, the State shall resettle the displaced inhabitants on suitable alternative land with due regard for their economic well-being and social and cultural values".* Clause 6 of Article 20 further provides that if the property acquired in the public interest is not used for that purpose, the original owner is

given the option to purchase the property at a price commensurate with the value of the property at the time of the reacquisition.

2.8.3 Procedure for the Acquisition of Public Lands in Ghana

Of all the laws for compulsory acquisition, the most widely used legislation for the acquisition of public land is the State Lands Act, 1962 (Act 125). For the purpose of this research, attention would be focused on only the acquisition procedure under State Lands Act, 1962 (Act 125).

The laid down procedures are spelt out in the State Lands Regulations, 1962 (LI 230) and subsequent Amendment Regulations; L.I 285 of 1963, L.I 520 of 1966 and L.I.591 of 1968. The procedure as set out in the Regulations requires that the institution that requires the land applies to the Lands Commission to find out if the land is not encumbered. The institution again contacts the Town and Country Planning Department and the Survey Division of the Lands Commission to ensure that the proposed user conforms to the layout and to also obtain an approved site plan of the land. If all the above prove positive, the institution then applies to the Regional Minister and attaches 16 copies of the plan covering the land. The Regional Minister then constitutes a Site Advisory Committee as is required under Regulation 1 (2).

The Site Advisory Committee later meets and conducts an inspection on the land to determine its suitability or otherwise for the purpose of the acquisition. During the inspection, the Committee captures the details of the current situation on the site, the developments on the land, the state of the neighbouring properties, etc. When the site is considered suitable, an interim valuation (which is estimated at the open market value of the interest so affected) is prepared by the Lands Commission

as is required by the State Lands (Amendment) Act 2000, Act 586.

The institution for which acquisition is being made is then made to deposit an amount equivalent to the preliminary assessment of the value of the land. This is to ensure prompt payment of compensation in compliance with Article 20(2a) of the 1992 Constitution and Regulation 3 (1) of LI 230. Recommendations are then submitted by the Site Advisory Committee to the Regional Coordinating Council (RCC) for the approval by the Regional Minister. When approved, the acquisition plans together with the report are submitted to the Regional Lands Commission for onward transmission to the Head Office of the Lands Commission for the drafting of the gazette notice. Upon approval by the Sector Minister which in this case is the Minister for Lands and Natural Resources, an Executive Instrument (EI) is then published in accordance with Section 2 of Act 125 as amended by AFRCD 62 of 1979 which requires that a copy of the EI is:

i. served personally on any person having an interest in the land or left with any person in occupation of the land;
ii. the Traditional Authority of the area of acquisition (which shall request the Chiefs to notify the people of the area concerned);
iii. affixed at a convenient place on the land;
iv. placed in newspapers circulating in the district on three consecutive occasions. The cost of the publication shall be borne by the beneficiary body;
v. the publication may be in such a manner as the Commission may direct; and
vi. the EI be published in the Gazette.

After the publication, any person whose interest has been affected by the acquisition is therefore called upon to submit their various claims as specified by Section 4 (1) of Act 125 which states:

> "Any person who claims a right or has an interest in land subject to an instrument made under section 1 or whose right or interest in that land is affected shall, within six months from the date of the publication of the instrument made under Section 1, submit in writing to the Lands Commission,
>
> a) particulars of his claim or interest in the land of that person,
> b) the manner in which the claim or interest is affected by the executive instrument issued under this Act,
> c) the extent of any damage done, and
> d) the amount of compensation claimed and the basis for the calculation of the compensation."

When the above is done, final assessment of compensation is done for which compensation is paid to the claimants. The final stages involve the indexing and plotting of the EI by the Records and Drawing Section of the Lands Commission, and the allocation of the land to the appropriate institution by the Lands Commission. It must be noted that upon the publication of the Executive Instrument, title to the land passes to the state free from all encumbrances.

2.9 Encroachment on Public Lands

Lake (2007) defines an encroachment on public property as *"the existence of any structure or item of any kind under, upon, in, or over the project lands or waters and/or the destruction, injury, defacement, removal or any alteration of public property including natural formations, historical and archaeological features, and vegetative growth."* Encroachment is also defined as the *"entry into some area or property without permission from the property owner or authorities. It denotes an illegal activity as one where the person who encroaches is not deemed to have any legal right to do so"* (Shitima, 2005). Thus, encroachment is generally seen as an

unlawful activity carried out on land or the illegal use of land inside protected areas.

The phenomenon of land encroachment all over the world is on the ascendancy and has become a threat to the globe. To that end so many studies have been conducted on this phenomenon globally with varied results. Shitima (2005) conducted a research on the Zambia's protected national forest landscape which because of human activities has resulted in the loss of substantial parts of the forest cover. He found out that several factors have combined to result in the encroachment and deforestation of the Mwekera National Forest. These included macro-economic policies such as economic liberalisation and privatisation of mines and other companies. He therefore recommended that the rights of the forest-dependent communities to the lands they have traditionally occupied must be recognized and any plans must only be carried out with their consultation and agreement in its management.

Birner et al (2006) also investigated into the encroachment of protected areas in Sulawesi, Indonesia and found two main factors as the causative factors for encroachment of the National Park. These included population density and the availability of suitable land inside the Park. Community agreements on conservation were discussed as a policy approach that could address all two factors. It was again recommended that the laws concerning encroachment should be strengthened whiles the traditional village authorities are made to help enforce these commitments. The success of such approaches will depend on the effectiveness of the projects in raising local incomes, especially of the poor. Community Agreements on conservation was also seen as a promising tool to deal with the issue of indigenous rights; which was on-going in several villages that acknowledged the traditional rights of local communities inside the Park. By this the communities would agree

not to expand the cultivation inside the Park and to contribute to the enforcement of other Park regulations, such as illegal logging.

The many studies conducted revealed that the most common forms of encroachment activities include settlements and agriculture, and that these forms of encroachment stem from the increasing demand for residential space and agricultural production. Many governments are worried by the extent of encroachments on public lands and people in authority in recent times have expressed much worry about the problem of encroachment in Ghana since such public lands are normally earmarked for very important projects.

The problem of encroachment by way of physical developments on public lands is on the increase in Ghana. In the high class residential suburbs are mansions belonging to the powerful in society; people with the wherewithal and those with political clout. Some of these mansions are sited on public lands and reserved areas. The phenomenon is the same in the low class residential suburbs. Temporary structures are erected on public lands, open spaces and sometimes waterway reservations ranging from kiosks, metal containers to sheds which eventually metamorphose into block work.

As observed by Dadson (2006), one of the causes of encroachment of land in Ghana is the fact that the country has not developed any standard policy on the size of land considered adequate for a particular purpose. Hence, a lot of these lands now appear to be lying fallow and have become the subject of encroachment by the very people who received compensation for these acquisitions. He cited the Osu stool as an example which demanded for portions of the Hausa reserve even though records available at the Lands Commission indicate that the Stool in 1894 was fully paid its compensation. The reason for the agitation was from the fact that no provision was

made for the investment of the revenue realized by the stools as a result of the acquisitions by the state.

The nature of encroachment on public lands ranges from the erection of buildings, to the carrying of such activities as farming, sand wining, hunting, fishing, logging, car washing bays, and other forms of unauthorized activities.

2.9.1 Encroachment in River Catchment Areas in Ghana

Rivers, streams, springs and underground water are good sources of water for humans. Water is an important natural resource necessary for human life. According to the World Meteorological Organization (WMO), an adult needs a minimum of 20-50 litres of water a day to cook, and for personal hygiene (Nsiah-Gyabaah, 2001). It is because of this that water bodies need protection, and for that matter forests in the catchments and watersheds are normally reserved against human activities and destruction. Salwasser (1999) writing on the connection between forest and water stressed on their importance when he said: *"healthy forests are a precursor to healthy water supplies. Forested watersheds are the catchment basins; they regulate natural hydrologic functions and keep both the quality and quantity of water delivery within natural ranges of variation. When the forests disappear, the water loses its quality and the timing of its storage and delivery is impaired. In the worst cases, massive floods result with effects felt all the way downstream to delta ecosystems and even into the open ocean."*

The quantity and quality of water supply are dependent on forests reserves in the catchments. Regrettably, catchment lands in the country have seen massive encroachment activities which have led to the destruction of the forest supposed to be protecting the rivers. These subsequently lead to reduction in water quality and

quantity. According to Nsiah-Gyabaah (2001), a 1977 research that examined the effects of the growth of Kumasi on natural resources management observed that one of the main water supply problems relate to the degradation of watersheds caused by human activities, especially housing development and agriculture. In recent times, catchments have become vulnerable to all kinds of negative human-related activities including dumping of all kinds of solid and liquid waste in the river channels including human excreta, refuse, saw dust, etc. In some cases, waterway courses are diverted in order to free space for other illegal developments.

In Kumasi, the Barekese Dam, a major source of water supply to the Kumasi Metropolis, the sub-urban and rural areas is being threatened by farming activities in its catchment areas. The trees that protect and feed the system are being destroyed. In Accra, some quarrying, agricultural, fishing practices, and illegal physical developments have put pressure on the Densu River which feeds the Weija Dam, the source of water for the western area of Accra metropolis. Streams which feed the Densu River are also being polluted and destroyed by these negative acts. (Nsiah-Gyabaah (2001))

In addition, the activities of vegetable crop farmers have proved very destructive of water resources. According to Nsiah-Gyabaah (2001), *"Some farmers have been pumping water from the river to their farms, contributing to the drying up of the river."* According to him, available statistics shows that *"daily water production in Abesim head waters had reduced from the original 1.6 million gallons to 534,000 gallons a day"* The situation has brought acute water shortage to Sunyani, Acherensua, Abesim and other areas. At Sunyani, some people have been walking long distances to get water, some from polluted sources.

Rapid population growth and increasing standards of living call for greater

demand for water. However, unsustainable human activities that lead to destruction of watersheds has made potable water supply inaccessible to a large section of the population. Current watershed management practices and rate of water consumption show clearly that water shortage would be intensified in the future. This has raised the concern of governments, NGOs and international organisations alike to come up with measures towards the formulation of a framework for sustainable and equitable watershed/catchment management. It is in recognition of this, and particularly because of its mismanagement, that March 22 has been set aside and observed as World Water Day every year. The event which began in 1994 is marked annually to raise public awareness of the importance of water in human life and the need to protect watersheds, conserve water resources and encourage institutions and agencies with responsibility for natural resource management to take appropriate measures to manage water resources for socio-economic development of the country.

CHAPTER THREE

THE MANAGEMENT OF OWABI CATCHMENT AREA

3.1 Introduction

This chapter examines the profile of the study area with emphasis on the location of the waterworks. The acquisition, compensation payments and encroachment issues of the catchment as well as the difficulties experienced by the Stakeholder institutions in the management of the dam are discussed.

3.2 Owabi Waterworks and the Catchment Area

The Owabi Waterworks is located about 20km North-West of Kumasi in the Ashanti Region on geographical coordinates of 6° 45' 0" North, 1° 43' 0" West (source: *Game and Wildlife Department (Kumasi), 2011).* It has been the main source of water supply for Kumasi and its environs since the 1920's, until the construction of the Barekese Dam in the early 1970s. Since then the two dams have remained the main sources of water supply for Kumasi and its suburbs. The Owabi Dam was constructed across the Owabi River as a reservoir for the waterworks so that enough water could be collected, treated and pumped for the increasing population of Kumasi.

The Dam is fed by two main tributaries- the Owabi and Sukobri Rivers which are in turn fed by other sub-tributaries forming a network of rivers and streams which constitute the geographical catchment basin of the Owabi River. The main streams within this Catchment include the Owabi, the Sukobri, the Akyeampomene, the Pumpunase and the Afu rivers. These then join other tributaries from the urban area at Atafua a rapidly-urbanizing community. River Akyeampomene flows through Bremang and Suame townships. River Pumpunase originates from the range near Ampabame and flows north-westwards through

Bohyen township. It is joined by other streams before emptying into the reservoir.

To avoid threats of pollution from farming and other human activities to the water bodies and ensure good quality water, eleven villages within the immediate environs of the reservoir; the statutory catchment were resettled. This was to facilitate the smooth operation of the waterworks, ensure water quality and flow, water storage, water recharge, reproduction area for fish and other aquatic organisms and climate.

3.3 Acquisition of the Owabi Catchment Area

The Owabi Catchment area which was acquired for the water supply project was acquired by the British colonial government on 14th March 1930; the date of posting Notices of Appropriation in the form of certificates. The first Certificate of Appropriation dated 21st March, 1929 was for the acquisition of the reservoir itself, whereas two other Certificates of Appropriation dated 10th February, 1931 and 9th February, 1933 respectively were for the acquisition of the statutory catchment area. The acquisition was done under Section 29 of the Ashanti Administration Ordinance of 1902 (Cap 110).

The about 4,134.5 acres of land that was acquired (known as the Statutory Catchment area) affected eleven (11) villages/communities and to pave way for the operation of the water works, these villages within the immediate neighbourhood of the catchment were resettled. These villages included Nwabi, Kokoso, Ohwim, Essaase, Bebera, Duase, Abrepo, Atafua, Nyankyerenease, Ampabame and Patase *(Source: Lands Commission (Kumasi), 2011)*. Among these communities were some which were partially displaced and others totally displaced. Except for Ohwim and Nwabi communities which were totally displaced from their lands, the rest of the

communities were partially affected. However, Ohwim and Nwabi rejected an arrangement to be relocated elsewhere and so refused to move. In all, a total of 830 persons were displaced as a result of the acquisition *(Source: Lands Commission (Kumasi), 2011)*. Currently, the catchment falls under two districts; Kumasi Metropolis and Atwima Nwabiagya District.

The colonial government relied on the Ashanti Administration Ordinance for the acquisition. By Section 29 (1) of the Ashanti Administration Ordinance "*It shall be lawful for the Chief Commissioner or any person appointed by him…to enter upon any land required for the public service".* It further adds that *"lands acquired for townships or for village sites or for any purpose which is in the opinion of the Chief Commissioner conducive to the health or welfare of the inhabitants of any town or village shall be deemed to be acquired for the public service".* Section 29 (5) also states that *"No compensation shall be allowed for any land so taken except for growing crops or in respect of disturbance of or interference with any buildings, works or improvements on or near the land taken"*

Since the acquisition of land for water supply clearly fell within the definition of health and welfare purposes, it was reasonably within the law that no compensation for the land needed to be paid. Thus, the acquisition of the Owabi lands was without the payment of compensation for the land itself. However, improvements on the land such as structures and buildings as well as crops found on the land so acquired were compensated for by the Government, and a total of Fourteen Thousand, Seven Hundred and Twenty-Seven British Pounds, Thirteen Shillings and One Penny (£ 14,727-13s-1d) was paid *(Source: Lands Commission (Kumasi), 2011)*.

3.4 Owabi Catchment Basin

The Owabi catchment basin constitutes the watershed which regulates natural hydrologic functions and keep both the quality and quantity of water delivery within natural ranges of variation, and which naturally drains into the dam. The catchment area was purposely acquired to create a watershed to ensure the continuous and constant supply of water to the dam. Any human activity carried on within the catchment area can adversely affect the quality and even the volume of water flowing into the reservoir. The entire Owabi catchment basin is divided into two main sections; geographical and statutory catchments.

3.4.1 Geographical Catchment Area

The geographical catchment covers the entire area which forms the river basin of the Owabi dam. Some important areas within the geographical catchment of the Owabi basin include Bremang, Atimatim, Afrancho, Suame Magazine, Kronum, Pankronu, Tafo, Ahwia, etc.

3.4.2 Statutory Catchment Basin

The statutory catchment which forms part of the geographical catchment is the area immediately within the environs of the dam. The statutory catchment can further be divided into two; the critical zone (areas closest to the reservoir) and non-critical zones (outer areas). The critical zone is further divided into three sections- reservoir/dam, flood plains and the forest reserve. The reservoir/dam collects water and holds same. The flood plain which is adjacent to the reservoir delineates the lowest and highest water level in the reservoir. The flood plain narrows near the dam and the maximum flooding level is about 750 feet above sea level.

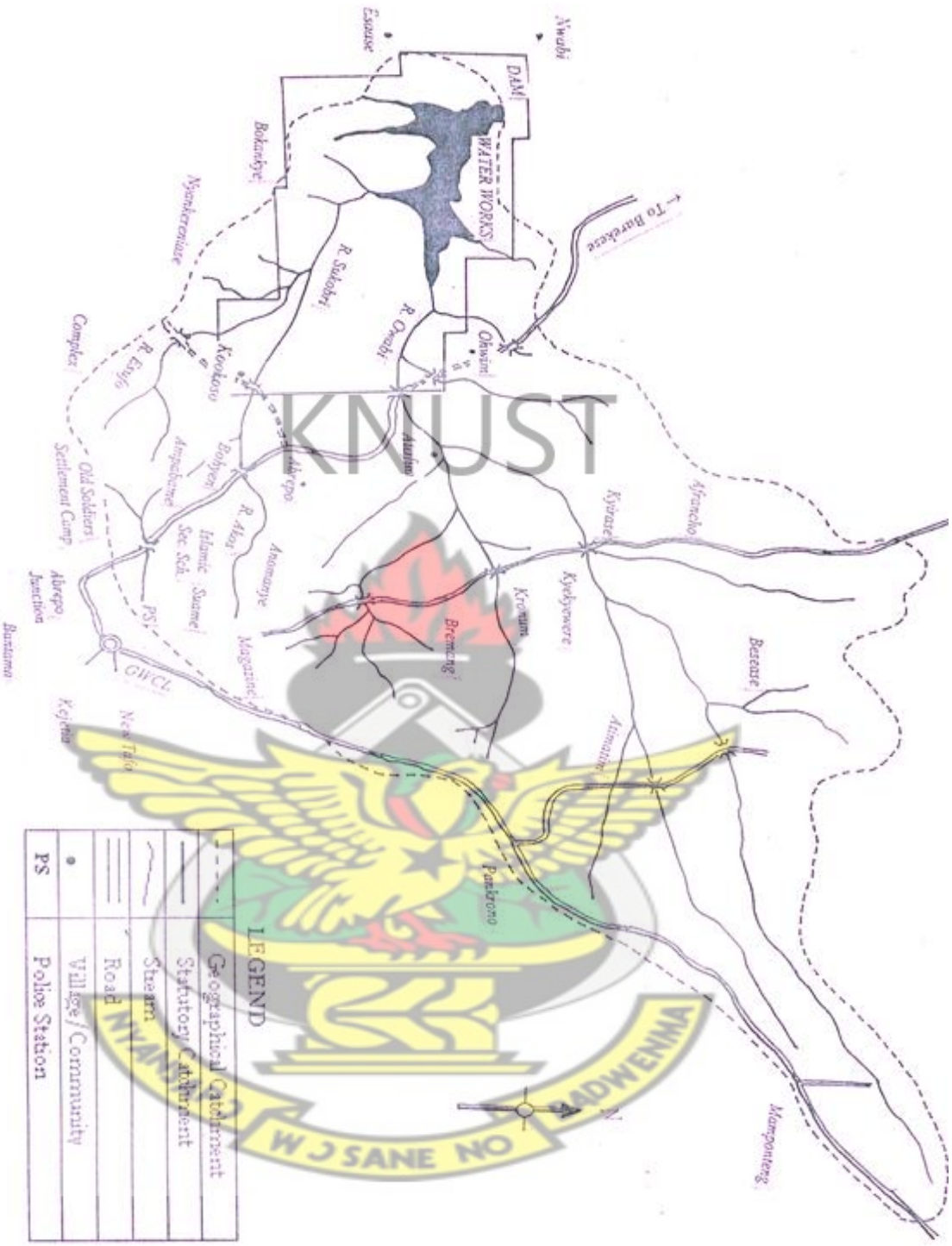

Figure 3.1: Map of Owabi Basin showing the Statutory & Geographical Catchments
Source: GWCL (2011)

The next section is the forest reserve which is approximately 13 km^2. The forest reserve, also known as the Owabi Wildlife Sanctuary, was purposely created for two (2) main reasons; protection of migrant birds and facilitation of water catchment by maintaining forest cover for the dam to prevent excessive evaporation (See Figure 3.2).

The above three sections form the critical zone of the Dam which needs maximum protection without any form of human activity. It is important therefore, that the critical zone is restricted and protected in its natural forested state devoid of such human activities such as farming, removal of vegetative cover, bush burning etc. When the forest disappears, the water loses its quality and the timing of its storage and delivery is impaired.

The rest of the catchment which surrounds the critical zone is the non-critical zone. The non-critical zone covers the section of the land acquired to protect the dam within which all the eleven communities/villages acquired were sited namely, Nwabi, Kokoso, Ohwim, Essaase, Bebera, Duase, Abrepo, Atafua, Nyankyerenease, Ampabame and Patase.

In the non-critical zone, human activity, though limited, is allowed since that section is considered sufficiently remote from the dam, and as such the operation of the reservoir is not likely to be affected. Thus, communities around the non-critical area were therefore allowed to farm in this area. However, erecting of structures and buildings are not allowed. Unfortunately of late, this section has been vigorously encroached upon and there are various forms of developments other than farming.

The most encroached portions are the southern and eastern portions which include, Abrepo, Kokoso, Nyankyerenease and Ohwim. The degradation of watersheds caused by human activities is becoming intensive.

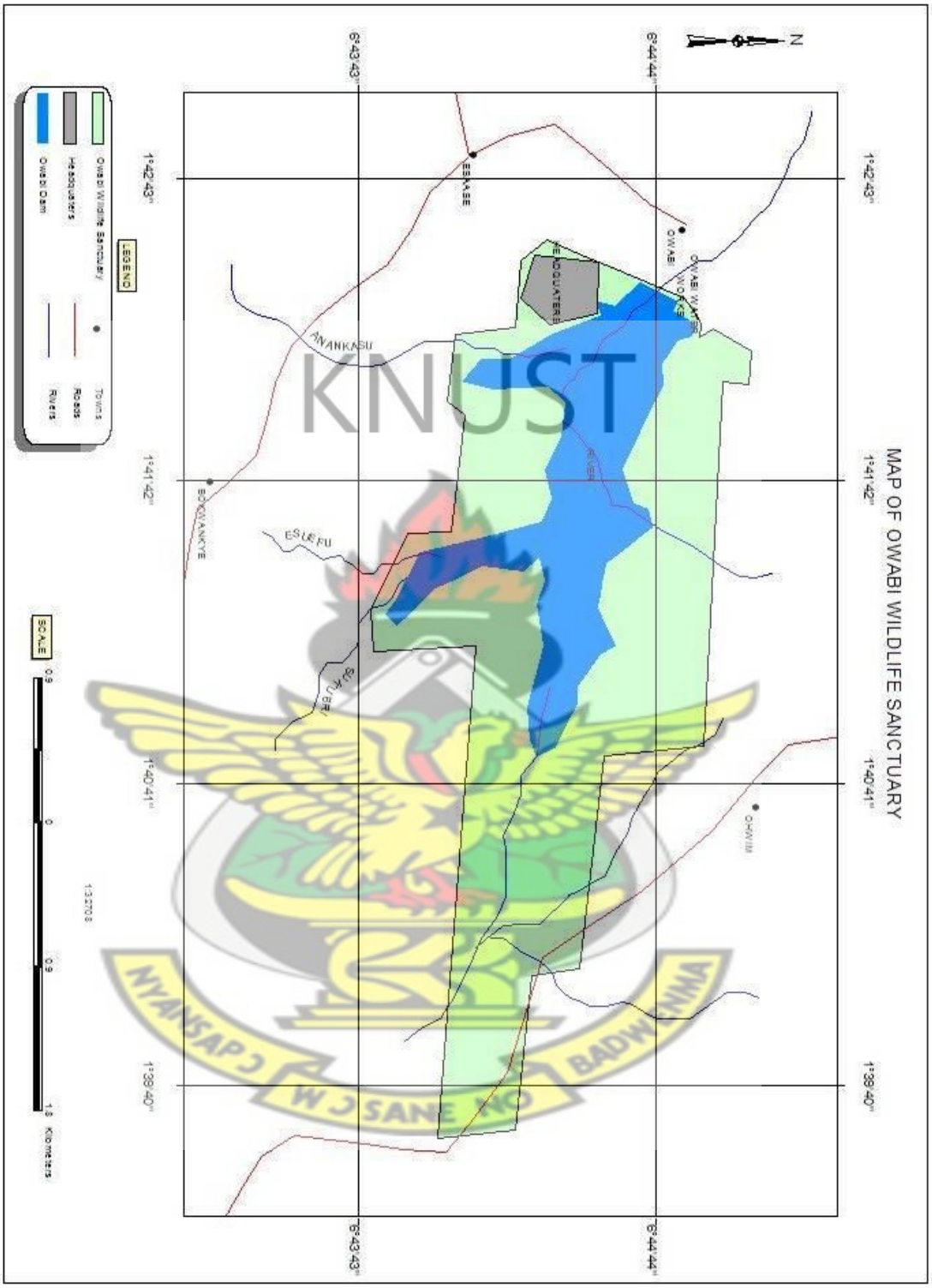

Figure 3.2: Map of the Forest Reserve - the Owabi Wildlife Sanctuary

Source: Game and Wildlife Department (2011)

3.5 Encroachment of Owabi Catchment Area

In separate interviews with the Ghana Water Company Limited and the Lands Commission, it was revealed that the encroachment of the catchment of the Owabi Dam dates back over two (2) decades ago. It all started in the 1990's when Ghana Water Company Limited (GWCL) decided to resettle the Nwabi Community on the land which the Abrepo community was dispossessed as a result of the acquisition of the Catchment area. This intervention was needed since the Nwabi community was affected by perennial flooding and thus most of their buildings were being washed away. However, the chiefs and elders of Abrepo community misunderstood the act and reasoned that if it was possible to resettle people within the catchment, then it would equally be best to take back their land and put up their own buildings.

From then on lands for which farming activities were permitted by GWCL were coming under serious encroachment and gradually being converted into building plots. In fact, the intervention of the Regional Co-ordinating Council (RCC), Kumasi Traditional Council (KTC), and Kumasi Metropolitan Assembly, could not resolve the situation. The situation became very serious in 1997 when the spate of encroachment was on the ascendancy to the extent that GWCL had to again solicit the help of the RCC, Lands Commission, KTC, KMA, the Police and other land agencies to help halt the accelerating encroachment. Through the collaborative effort of these agencies, a press statement was issued and all those who had acquired lands within the catchment were asked to submit their relevant documents to the Lands Commission for examination. Even though about 253 people responded, none of them had either a lease or building permit on their respective plots.

Further inspection of the site in 1998 also revealed that about 435 buildings at various levels of construction were identified. In order to reclaim the encroached

land, demolition of those structures started in earnest and about 140 houses were pulled down. However, before the rest could be razed to the ground, the encroachers obtained a court injunction from the Kumasi High Court to restrain GWCL from further demolition pending the final determination of the case. The injunction order was misconstrued by the chiefs and their elders as a judgment in their favour hence, encroachment continued at a faster rate and to-date almost all the buildings demolished in 1998 have been rebuilt.

The encroachment is in so many forms. They include buildings, farming, sand winning, timber logging, and fishing by private individuals. However, the most common forms are building developments mostly concentrated in the Abrepo, Kokoso, Nyankyerenease and Ohwim portions of the statutory catchment. The area is also noted for sand winning activities mainly at Bokankye and Nyankyerenease. These activities have resulted in the clearing of the forest and vegetative cover that protect the Owabi River and this promotes siltation as well as rapid evaporation of the water in the dam from the intense sun thereby threatening the lifespan of the dam.

There is also serious logging of trees and clearing of the bushes in the catchments to pave way for sand winning. All of these have resulted in a large part of the catchment being encroached. What is going on in the reserve is a recipe for disaster and poses a challenge to the continuous supply of enough quality water for the ever growing population of the metropolis. The worst encroached parts are in the southern and eastern portions of the catchment within the communities of Kokoso, Abrepo, Nyankyerenease and Ohwim which all fall within Kumasi Metropolitan Assembly.

Plate 3.1 (a): Picture of an On-going Sand Wining Activity at Bokankye

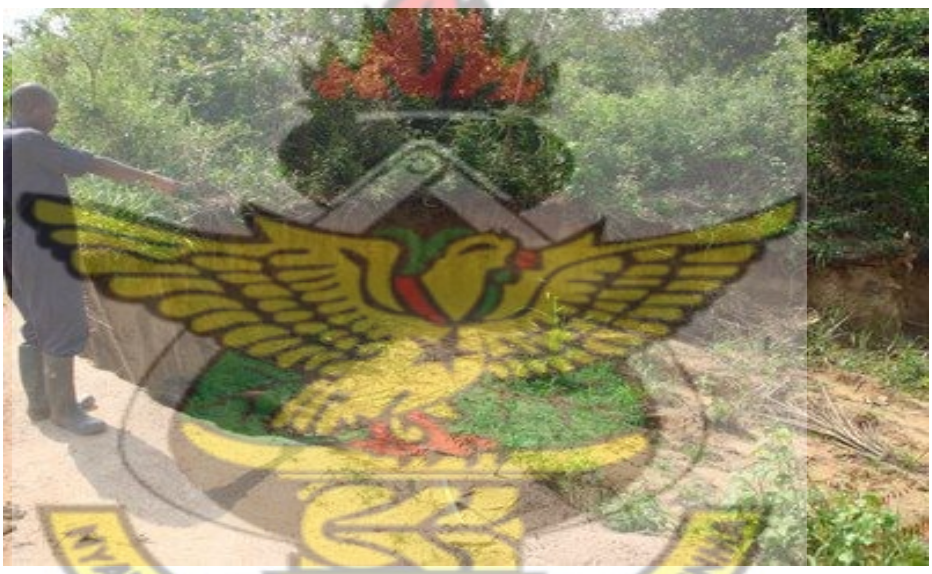

Plate 3.1 (b): Picture of an Area Deformed due to Sand Wining Activities

Source: Field Survey (2011)

Although GWCL had on numerous occasions appealed to the neighbouring communities/villages to desist from clearing the forest cover and to discontinue with the sand winning activities, the practice still persists. For example, out of the original land size of 4,134.5 acres acquired for the Owabi dam and its catchment (Statutory catchment), about a third of it (i.e. 1,378.2) had been grossly encroached

upon *(Source: GWCL (Kumasi), 2011).*

3.6 Institutions Involved in the Management of the Owabi Catchment

Different statutory bodies and private organisations have been mandated by law to see to the management of the Owabi Catchment area. These bodies play different roles and complement one another towards the effective and efficient management of the area. Ghana Water Company Limited is the main institution charged with the proper management of the reservoir as well as the catchment.

However, other organisations that play supporting roles in the management of the catchment include Lands Commission, Town and Country Department, Kumasi Metropolitan Assembly (KMA), Atwima Nwabiagya District Assembly, Game and Wildlife Department, and the Environmental Protection Agency (EPA).

3.6.1 Ghana Water Company Limited (GWCL)

Ghana Water Company Limited is a quasi-government institution which is responsible for the supply of safe drinking water through its network of pipes within the urban areas. In providing potable water for the people of Kumasi, the Company makes use of the Barekese and Owabi Dams. In the case of Owabi catchment area, the Company is responsible for its operation and maintenance as well as the sustenance of the area by ensuring the continuous presence of vegetative and forest cover.

Encroachment of the area by private land developers has however been a major problem faced by GWCL in the management of the catchment. According to GWCL, encroachment has reduced the water level of the dam through evaporation since the streams that lead to the dam are all exposed to direct sunlight. It has also

increased the cost of water production since more cost is incurred by way of acquiring 'strong' chemicals to be used for the water treatment. The few security men patrolling the area to keep human activities on check are unable to cover the large area in the light of the High Court injunction order halting further demolition of developments in the catchment since 1998. More so, the Court's action has been misconstrued by the chiefs as a sign of victory, and a licence for further encroachment of the area.

Further, the Company's legal division which deals with all legal issues across the country is based in Accra and since the regions do not have purposely created legal offices, all matters legal in nature are handled at the national level. This makes it difficult to deal with the legalities pertaining to the Owabi catchment area. For this reason, the power to stop, arrest and prosecute people for encroachment is weak and now rests with the Environment Protection Agency.

3.6.2 The Lands Commission

The Lands Commission which is now made up of the Public and Vested Land Management Division (PVLMD), the Land Valuation Division (LVD), Survey and Mapping Division (SMD) and the Land Registration Division (LRD) played a key role in the acquisition and still plays an important role in the management of the Owabi Catchment area. As per Article 258 of the 1992 Constitution and the Lands Commission Act, 2008 (Act 767), the Commission among others is tasked with the management of public and any lands vested in the President by the Constitution or by any other law or any lands vested in the Commission on behalf of the government.

Owabi catchment area is public land acquired for the provision of potable

water for the public. Thus, the Commission is one of the main bodies responsible for assisting GWCL in the management of the catchment. It does this in coordination with other public and private agencies. The Public Lands (Protection) Decree, 1974 (NRCD 240) also empowers the Commission to deal with trespassers on public lands. It states in part;

> "Where any person (in this decree referred to as the trespasser) has unlawfully occupied or in any manner encroached upon or interfered with any public land, the appropriate or any duly authorized agent of such authority may in writing serve a notice to any part of the land affected, requiring that trespasser to vacate that land within 21 days from the date of the notice."

The Commission, specifically the PVLMD division thus has the power to eject any trespasser, remove and demolish any structure on an encroached land. Thus, in 1998, the Lands Commission applied this law to the letter. When the encroachers failed to respond to the notices, through the collaborative efforts of the Regional Lands Commission and GWCL, the demolition exercise was carried out. Information from the Lands Commission indicates that none of the developers within the area has a lease on the land they occupy.

The Land Valuation Division (formerly the Land Valuation Board) was non-existent at the time of the acquisition of the Owabi catchment area and as such did not play any role in its acquisition.

The Survey and Mapping Division (SMD), formerly the Survey Department also played an active role in the acquisition since it surveyed and demarcated the entire stretch of land (4,134.5 acres of land), and it is still involved in its management. Encroachment has been on-going in the area and to assess the extent of encroachment in the area, SMD has completed the re-survey of the catchment area which pecks the encroached area to be 1,378.2 acres. The division is also part of the Special Task Force committee looking into the encroachment problem in the

area. The Land Registration Division (LRD) has a role to play in the management of the Owabi catchment by ensuring that grants from the encroached lands are not registered.

However, the Commission as a whole is beset with problems in the management of the Owabi catchment; the greatest of all is the injunction order by the High Court which has crippled the stakeholder institutions including the Commission from acting to control the encroachment.

3.6.3 The Town and Country Planning Department

The Town and Country Planning Department is responsible for the proper planning of towns so as to ensure the optimum use of land. Throughout the years, the office has tried as much as possible to preserve the catchment area. Thus, when coming out with planning schemes/layouts for areas around the catchment, it does so in consultation with GWCL to ensure that portions that fall within the catchment are excluded. This also reminds the public about the existence of the catchment and whether or not they are within or outside the catchment *(Source: Town & Country Planning Department (Kumasi), 2011).*

Initially, the Department had the policy of leaving out certain areas in the geographical catchment such as Bremang, Abrepo, Atafua, Bohyen, Pankronu and the northern part of Tafo since the tributaries of the Owabi river flows through these towns. However, because of increasing population and demand for land, the Department has started coming out with schemes within the area though this is planned in such a way that human activities along the Owabi River and other streams are reduced to the barest minimum *(Source: Town & Country Planning Department (Kumasi), 2011).*

3.6.4 Kumasi Metropolitan Assembly

The Owabi catchment area falls within the Kumasi Metropolitan Assembly and Atwima Nwabiagya District Assembly. Areas within the catchment that fall under KMA include Kokoso, Nyankyerenease, Abrepo, Ohwim and Atafua. The KMA exercises political, administrative and planning authority over these areas through the decentralized sub-metropolitan councils.

Section 46(1) of the Local Government Act, 1993 (Act 462) establishes a District Assembly as the planning authority for each district. The Kumasi Metropolitan Authority (KMA) was established on 8th February, 1989 by Legislative Instrument (LI 1432) to be responsible for the making of planning schemes (Section 46(2)), issuing of planning and building permits (Section 49); and the making of building bye-laws within the scope of national building practices prescribed by law which include the removal and abatement of obstruction and nuisance (Section 62). Section 51(1) also provides that: *"A District Planning Authority may grant a permit for development conditionally or unconditionally, or may refuse to grant the permit, except that where a permit is refused or granted conditionally reasons shall be given in writing in each case."*

From the foregoing, it is the responsibility of the KMA to manage and check developments within the catchment area of the Dam. If development is unauthorized, KMA has the mandate to remove such development. Again, since residential developments within the catchment are unauthorized and illegal, KMA has the right to demolish them. That is why in the demolition exercise that took place in 1998, KMA took a very active part in it.

3.6.5 Atwima Nwabiagya District Assembly

Some portions of the catchment area also fall within the Atwima Nwabiagya District Assembly. These areas include Bokankye, Essaase and Nwabi portions of the catchment. Like KMA, the District Assembly is also responsible for many essential services relevant to the environment and natural resource management; including building inspections, refuse collection and ensuring good sanitation, traffic management, and planning functions such as land-use zoning and building plan approvals. It conducts periodic site inspection to see to it that buildings are being developed as planned and also checks unauthorized developments. It does this in collaboration with its mother Town and Country Planning Department, GWCL, KMA and other stakeholders involved in the management of the catchment.

In coming out with planning schemes/layouts for areas bordering the catchment, it does so in consultation with GWCL to ensure that those portions that fall within the catchment are excluded. The Assembly for instance once turned down an application and request by the landowners from such areas as Bokankye, Essaase and Nwabi for a planning scheme because the areas clearly fall within the catchment area. Information available from the Assembly revealed that none of the developers within the area has ever been granted the permit to build. However, trespassers and unauthorized developers misconstrue the buying of the building jackets (a file which contains applications for development and building permits) from certain unscrupulous personnel of the Assembly obtained through foul means, as grants of building permit.

3.6.6 Environmental Protection Agency

The Environmental Protection Agency was established by the Environmental

Protection Agency Act, 1994 (Act 490) with regulatory and enforcement powers. The Agency emerged from the Environmental Protection Council which was established in 1974 under Environmental Protection Decree, 1974 (NRCD 239) as an advisory, research and coordinating council on environment issues. The responsibilities of the Agency are prescribed under Act 490 which impact on land management.The responsibilities and roles of the Agency can be summarized to be the enforcement of environmental legislation, undertaking environmental research, and the provision of advisory services to government.

Specifically, EPA ensures quality water monitoring in the Owabi Dam. It undertakes site visits to inspect suspected infringements of legislation, cases of pollution and so forth. In doing this, it works closely with GWCL and the district assemblies. Of late the encroachment to some extent has had a negative effect on the water quality in the reservoir. Thus, EPA has a comprehensive water quality-monitoring programme which is in place and which among other things include monitoring of specific areas and activities and the Owabi catchment area is being monitored against housing developments and farming activities along the streams.

3.6.7 Game and Wildlife Department (GWD)

The work of the Game and Wildlife Department is the monitoring of the Owabi Wildlife sanctuary which serves two fold purposes- the protection of migrant birds and the facilitation of water catchment by maintaining the forest cover for the dam to prevent excessive evaporation. The operation of the GWD is limited to the core area; the forest reserve which is approximately 13 km^2. The rest of the catchment is under the control and management of GWCL. Information from the department reveals that the core area under their jurisdiction has not yet been affected by

encroachment. However, their major problems include poaching in the forms of firewood collection, fishing in the dam and streams and sometimes farming within the sanctuary.

3.7 Problems in the Management of the Owabi Catchment

3.7.1 Court Injunction on the Demolishing

One major problem that the institutions have to contend with is the imposition of the injunction order on the demolishing by the High Court. In 1998, a demolishing exercise started by a task force put together by the institutions to remove the about 400 illegal and unauthorized houses was stopped by the Kumasi High Court after only 140 of the buildings had been destroyed. The injunction order against the demolition suspended the exercise which is still on hold. The chiefs see this as a victory, and this has encouraged further development and redevelopment of the demolished structures. This order has been in force for over 10 years and attempts to get the injunction order removed has proved futile. The institutions are still pressing for the lifting of the injunction order.

3.7.2 Lack of Coordination/Cooperation of the Stakeholders Institutions and from the Landowners

There has not been much co-operation and co-ordination among the various institutions involved in the management of the catchment. Even though, there is a committee jointly formed by the various institutions involved, it is not working as it should. GWCL has concentrated on the pumping of water to the detriment of overseeing and coordinating the activity of the management of the catchment, another responsibility required of them.

The lack of coordination is also evidenced from the supply of electricity in the study area. The Ghana Electricity Company Limited forms part of the planning committee in the various district Assemblies. The KMA bye-laws requires that before any development can get connected to electricity from the public mains, the development should have received development and building permit from the planning committee. But this has never been complied with as all the developments in the study area that fall within KMA have all been connected to the public mains. This shows the lack of coordination and cooperation between the stakeholder institutions. The most surprising thing is that GWCL itself has supplied pipe-borne water to developments in the encroached areas.

Again, even though there have been instances where GWCL had to appeal to the chiefs and the people of the communities surrounding the catchment to desist from encroaching this had yielded no results. For example, when it was noticed that encroachment was becoming more serious, the Regional Coordinating Council (RCC) set up a Technical Committee to examine the reports of encroachment in the catchment. As one of their measures, notices were placed at vantage points within the catchment, but the chiefs and encroachers removed them. Despite repeated appeals and warnings from the Stakeholder institutions, the chiefs continued to allocate portions of the catchment. The resultant effect is that it has become the more difficult for the Stakeholder institutions to properly manage the catchment.

3.7.3. Political Influence/Underpinnings

There seems to be some political underpinnings which tend to slack the management of the catchment area and in particular mitigating the encroachment. Interactions with the indigenes especially those in the Nwabi village reveals alleged promises of

the Regional Ministers and Metropolitan/District Chief Executives to give portions of the catchment back to the people to develop into residential facilities. Much as the stakeholder institutions are ever-ready to take stringent measures to control the encroachment, they are often told to wait by the authorities in government. This is encouraging further encroachment since the developers think that as long the political system continues to exist, they are shielded and their buildings can never be pulled down.

3.7.4 Lack of Personnel/Logistics

A common complaint that emerged from interviews with all the stakeholder institutions is that of lack of logistics and the requisite personnel. The few staff available focuses mostly on office work to the neglect of field work. They also allege little or no motivation for the staff to undertake field work during which workers often come under attack and harassment. This has largely contributed to the ineffective development control of unauthorised developments now springing up. Officials of the Development Control Unit of KMA have been subjected to harassment by land guards and wealthy developers who engage the police to arrest Building Inspectors who are carrying out their lawful duties. In many instances, officials of development control have been detained for seizing construction equipments of unauthorised developments. This practice has dampened the spirit of officials especially when the Metropolitan Assembly takes no steps to defend such unfortunate officials.

CHAPTER FOUR

RESEARCH APPROACH AND METHODOLOGY

4.1 Sampling Frame

The sample for the study was chosen from 8 communities out of the 11 communities which were affected by the acquisition of the statutory catchment of the Owabi dam which included Abrepo, Nwabi, Kokoso, Essaase, Atafua, Nyankyerenease, Duase, Ohwim, Patase, Bokankye and Ampabame. The eight (8) communities of Abrepo, Atafua, Ohwim, Nwabi, Essaase, Bokankye, Nyankyerenease and Kokoso were chosen through the use of the purposive sampling technique. The selected communities were especially chosen because they are the communities which share boundary with the statutory catchment. Again, the selected areas also covered all the compass direction- Nwabi and Ohwim are to the North, to the South by Bokankye, Nyankyerenease and Kokoso, to the East by Atafua and Abrepo and Essaase to the West of the Catchment.

Table 4.1: Housing Stock of the Sampled Communities

Community	Year 2000 Housing Stock	Housing Units
Nyankyerenease	650	52
Ohwim	317	25
Abrepo	809	65
Essaase	187	15
Kokoso	294	24
Bokankye	145	12
Atafua	41	12
Nwabi	18	5
Total	**2,461**	**210**

Source: Ghana Statistical Department (2010) and Author's Construct (2011)

From the 8 communities, 8% of the housing stock in each community was selected as the sample size for 6 communities. However, 30% of the housing stock was chosen from two of the communities, Nwabi and Atafua. What informed the choosing of the 30% was because the 8% of the housing stock of the two communities was less than 1 house which would have been less representative, hence the adoption of 30%.

Table 4.2: Sampled Communities/Institutions and their Respective Sample Sizes

Community	Houses Sampled	Institution	Traditional leaders	Opinion leaders	Total
Nyankyerenease	52	-	1	1	**54**
Ohwim	25	-	1	1	**27**
Abrepo	65	-	1	1	**67**
Essaase	15	-	1	1	**17**
Kokoso	24	-	1	1	**26**
Bokankye	12	-	1	1	**14**
Atafua	12	-	1	1	**16**
Nwabi	5	-	1	1	**7**
Lands Commission	-	1	-	-	**1**
GWCL	-	1	-	-	**1**
GWLD	-	1	-	-	**1**
EPA	-	1	-	-	**1**
TCPD	-	1	-	-	**1**
KMA	-	1	-	-	**1**
Atwima Nwabiagya Dist	-	1	-	-	**1**
Total	**210**	**7**	**8**	**8**	**233**

Source: Author's Construct (2011)

Again, in each house chosen, one person preferably the owner of the property or a person who owns a particular activity in the catchment was interviewed. Thus, a total number of people interviewed were therefore 233; 210

houses of 1 person each, 16 traditional/Opinion leaders and 7 officials/staffs from the seven stakeholder institutions. The specific divisions are as indicated in the table 4.2 above.

Both purposive and random samplings were used to collect data from the 8 communities. The 210 houses were mainly drawn through systematic random sampling but in exceptional cases through purposive sampling for respondents who have other uses on the land apart from buildings. Each individual/owner from each housing unit to be interviewed was chosen through purposive sampling, the same as the traditional/opinion leaders and those from the various institutions.

4.2 Sources of Data

4.2.1 Primary Data Sources

The main tool for this research was the use of questionnaires which comprised a mix of close-and-open-ended type of questions. The research also relied on the use of interviews with a prepared set of questions as well as informal discussions with encroachers. Many visits were also made to the site to observe the nature and extent of encroachments and state of the tributaries that empty into the Owabi reservoir. In addition, Participatory Rural Appraisal (PRA) in the form of Focus Group discussion was also used. The interview took the form of an exchange of views and opinions through discussions with people concerned about the issues under discussion. These included some selected developers, farmers, and those who have knowledge about the on-going encroachment in the study area.

Relevant information was also obtained from the institutions involved in the management of the Owabi catchment; viz; Ghana Water Company Limited, Lands Commission, Environmental Protection Agency, Game and Wildlife Department,

Town and Country Planning Department, Kumasi Metropolitan Assembly and Atwima Nwabiagya district Assembly.

4.2.2 Secondary Data Sources

Secondary data was collected from existing sources; textbooks, articles, published and unpublished reports, policy documents, etc. as material for the review of literature on sustainable land management and encroachments on the Owabi Catchment Area. The Internet has also been a very helpful source of information for the writing of the thesis.

4.3 Method of Data Analysis

Both quantitative and qualitative models were used in the analysis of the data. The quantitative data were processed and analysed using Microsoft Excel Software and the output presented in the form of frequency tables, bar, and pie graphs. The qualitative data collected through household interviews, Focus Group Discussion, institutional interviews and observation was analysed by summarizing, describing and interpreting and reconciling with quantitative data.

CHAPTER FIVE

PRESENTATION OF RESULTS AND DISCUSSION

5.1 General Characteristics of Respondents

5.1.1 Population Characteristics and Housing Stock of Respondents

The population of the sampled communities has grown tremendously from the time of the acquisition of the Catchment area. The total population of the Owabi Catchment as at the time of the acquisition in 1930 was only 830. By the year 2000, the population had increased to 30,069 people representing about 3,523 percentage increase. The impact of the rapid population growth on land can easily be imagined. This in fact has accounted for the increase in the demand for land for housing and other uses which is also the reason for the encroachment of the catchment.

Table 5.1: Population of the Sampled Communities

Community	1984	2000
Abrepo	1584	10146
Atafua	127	455
Ohwim	887	3279
Kokoso	-	2285
Nyankyerenease	1496	3896
Bokankye	805	845
Essaase	885	2014
Nwabi	595	255
Total	**9,761**	**30,069**

Source: Ghana Statistical Service (2010)

An interesting phenomenon is the declining population of the Nwabi community. Whereas the figures for all the other communities have been increasing over time, that of Nwabi tends to have a declining growth, from 595 in 1984 to 255 in 2000 due to the constant flooding of the area which tend to wash almost all the houses away thereby forcing people out of the area. This is because the area is low-lying and is supposed to be the spill-off zone in a situation where the reservoir level

rises beyond the safe mark. This informed the reason why at the time of acquisition the Nwabi Community was among the two communities that were totally-displaced and were to be resettled elsewhere. However, the people refused to be re-settled despite the threats of spill-offs.

5.1.2 Gender Distribution of Respondents

Even though, the target was not on a particular gender, there was a fair representation of gender. Out of the 210 respondents from the communities, 92 were women constituting about 44%.

5.1.3 Age Distribution of Respondents

On age distribution of the respondents, the majority (i.e. 93 respondents) fell within the age group of 46–55 years and 58 were above 55 years. 37 respondents were between the ages of 36-45 while three were below 25 years.

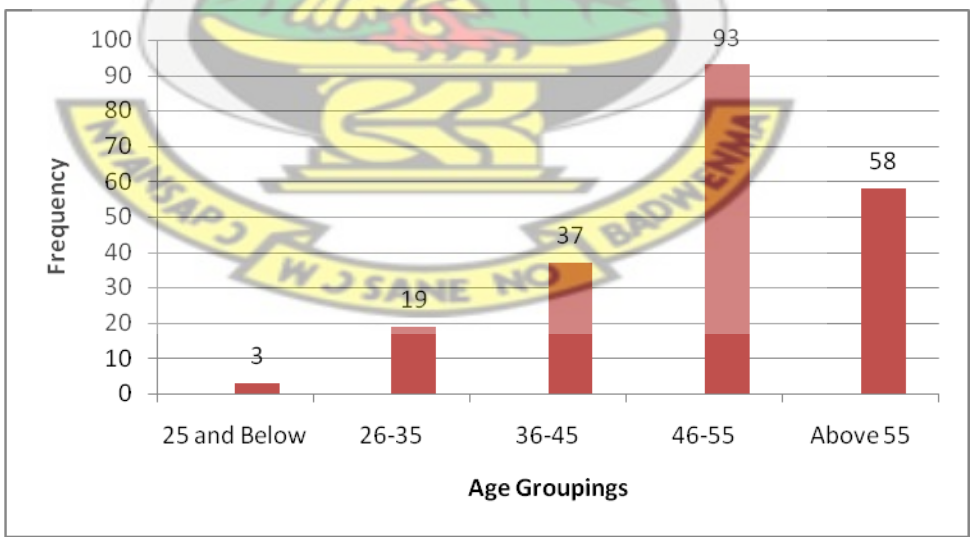

Figure 5.2: Age Distribution of Respondents
Source: Field Survey (2011)

5.1.4 Educational Level of Respondents

The educational levels of the respondents are above average. 109 or 51.9% of the respondents have had Basic education. About 29.6% or 62 have also completed Secondary/Vocation training and six (2.8%) have had tertiary education. 15 (7.1%) have not had formal education at all. Table 5.2 below shows details of the educational levels of the respondents.

Table 5.2 Educational Level of Respondents

Educational Background	Frequency	Percent (%)
No Education	15	7.1
Basic	109	51.9
Secondary/Vocational	62	29.6
Teacher Training/ Post-Secondary	18	8.6
Polytechnic	3	1.4
University and Above	3	1.4
Total	**210**	**100**

Source: Field Survey (2011)

The statistics show that except for 15 respondents or 7.1% who have not had any formal education, nearly 93% have had various stages of education. It is therefore a contradiction that such educated people could develop in an area which has been properly acquired for a special purpose. Apart from the indigenes who knew the situation on the ground, the non-indigenous people though many have had formal education did not know the situation at the time of allocation. Due diligence was not done since they did not conduct searches at the Lands commission to find out the condition of the land.

5.1.5 Indigenous Characteristics of Respondents

Many of the respondents, 110 (52.4%) were found to be indigenes from the communities. However, about 47.6% were non-indigenes who have moved to these communities as a result of the expansion of Kumasi and its environs.

Table 5.3 Indigenous Composition of Respondents

Community	Indigenes	Percent (%)	Non-Indigenes	Percent (%)	Total
Nyankyerene ase	27	52.5	25	47.5	52
Ohwim	19	76	6	24	25
Abrepo	21	32.9	44	67.1	65
Essaase	13	86.7	2	13.3	15
Kokoso	11	45.8	13	54.5	24
Bokankye	10	83.3	2	16.7	12
Atafua	4	33.3	8	66.7	12
Nwabi	5	100	0	0	5
Total	**110**	**52.4**	**100**	**47.6**	**210**

Source: Field Survey (2011)

The greater majority of the non-indigene respondents were from Abrepo, Kokoso and Atafua communities. The three communities have about 67.1%, 54.5% and 66.7% of their respective populations being non-indigenes. The other communities have largely indigenous populations.

5.2 The Encroachment Situation within the Catchment

5.2.1 Pattern of Land Use in the Catchment

Encroachments in many forms were identified within the catchment, including buildings, farming, sand winning, fishing and logging. Among these, unauthorised building seems to be dominating as depicted in Figure 5.3 below. For respondents who have one activity or another in the catchment, as many as 151 constituting 72% had building/structures in the area, 22% were undertaking farming activities with the remaining 6% either doing sand wining or logging activities. The above statistics indicates that among the land uses found within the catchment, buildings dominate followed closely by farming.

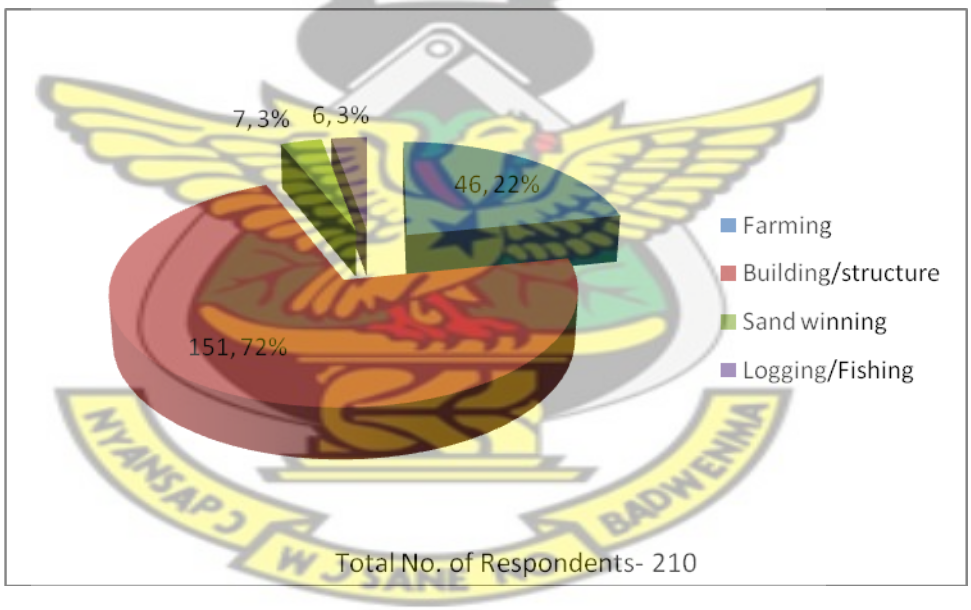

Figure 5.3: Land Use by Respondents in the Catchment
Source: Field Survey (2011)

The above phenomenon is especially the case in the southern and eastern portions of the catchment which includes communities such as Nyankyerenease, Kokoso, Abrepo and Atafua as indicated by table 5.4 below. As a result of the above, many farming units within the area are giving way for more housing units,

gradually reducing farming activities and increasing the housing stock. A casual inspection reveals that many farmsteads were being pillared to pave way for building projects.

Table 5.4 Forms of Encroachment Noticed

Community	Farming	Building	Building Farming Sand winning	Fishing Farming Logging	All	Don't Know	Total
Nyankyerenease	0	16	3	0	0	33	**52**
Ohwim	2	21	0	1	0	1	**25**
Abrepo	3	46	2	0	3	11	**65**
Essaase	0	4	1	9	0	1	**15**
Kokoso	0	15	4	1	1	3	**24**
Bokankye	1	6	3	0	0	2	**12**
Atafua	0	7	2	1	1	1	**12**
Nwabi	1	4	0	0	0	0	**5**
Total	**7**	**119**	**15**	**12**	**5**	**52**	**210**

Source: Field Survey (2011)

Respondents and most people interacted with in all the areas seem to recognise building development as the most common form of encroachment within the catchment except for those from Essaase who saw farming, fishing and logging as the most common forms. Out of the 210 respondents, 119 constituting 56.7% said that buildings dominate the encroachment in the catchment. However, 52 (24.8%) of respondents did not know or were not aware of any encroachment activity in the area. However, further investigations revealed that even though a few were truly not aware about the on-going encroachment in the catchment, the responses were due to fear of losing their buildings.

5.2.2 Notice of Encroachment in the Catchment

As indicated in figure 5.4 below, a greater majority of respondents (60%) who knew of the on-going encroachment seem to have noticed this phenomenon for between 6-10 years. Others (18%) believe the encroachment began between 11-20 years. It could therefore be said that encroachment in the catchment began well over a decade ago. They asserted that they came to realize this phenomenon in 1998 when GWCL and the Lands Commission undertook the demolition exercise in the area. However, GWCL believes the encroachment started more than three decades ago but only became alarming over a decade ago.

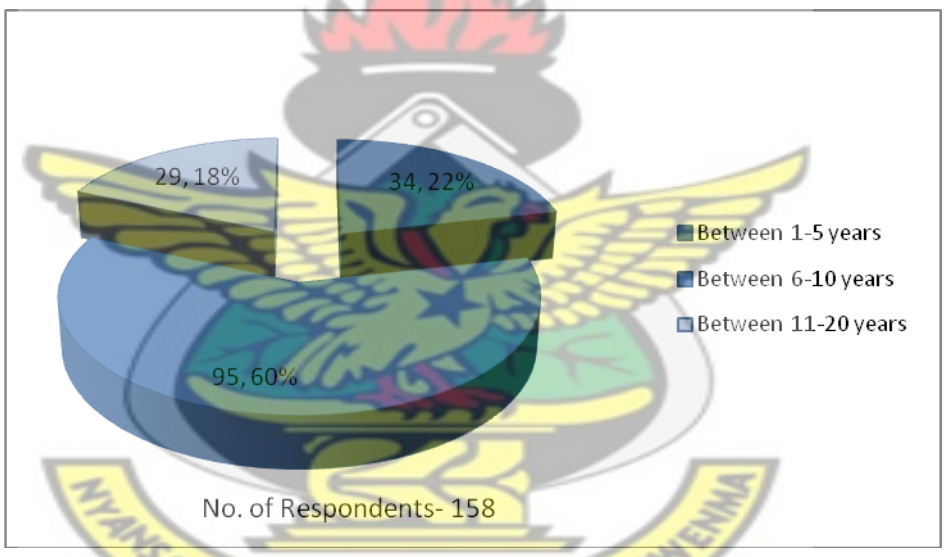

Figure 5.4: Response to the time when Encroachment was noticed
Source: Field Survey (2011)

5.2.3 Developments Affected by the Demolition Exercise in 1998

Out of the 151 respondents who had developed houses within the catchment, 27 (17.9%) were affected by the demolition exercise which took place in 1998. As shown in Table 5.5 below, only Abrepo and Kokoso were affected by the demolition exercise. Twenty-six (26) houses out of the 60 households interviewed at Abrepo

and 1 out of 17 at Kokoso were affected by the exercise. When they were further asked the reason why they had rebuilt those houses, the major reason they advanced was the assurance from the chiefs that the Court has ruled in their favour. This was apparently due to the fact that the chiefs had misconstrued the injunction order from the Court imposed on further demolishing as a judgment in their favour and thus persuading the developers to rebuild.

Table 5.5 Developers Affected by the Demolition in 1998

Community	Yes	No	Don't Know	Total
Nyankyerenease	0	37	3	**40**
Ohwim	0	15	2	**17**
Abrepo	26	23	11	**60**
Essaase	0	5	0	**5**
Kokoso	1	14	2	**17**
Bokankye	0	1	0	**1**
Atafua	0	6	1	**7**
Nwabi	0	4	0	**4**
Total	**27**	**105**	**19**	**151**

Source: Field Survey (2011)

The statistics indicate that at the time of the demolition, most of the communities had seen little or no encroachment at all. In fact, for communities such as Essaase, Bokankye and Nyankyerenease, encroachment by way of buildings is a recent phenomenon. At the time of data collection for example, large areas were seen cleared and pillaring was on-going to pave way for the putting up of buildings. This was especially the case in Bokankye and Nyankyerenease communities. An

opinion leader in Nyankyerenease gave this defence:

Box 1

We have realized that we are being cheated. Many communities are encroaching portions of the land without being penalized. No community is higher or more important than the other. If anything, we are all faced with the same predicament; no livelihood, housing pressure, yet no benefits from the dam whatsoever. Meanwhile, the land is lying idle and not being put into productive use. We have no other option than to also encroach to make a living.

(An Opinion leader at Nyankyerenease, 09/09/2011)

5.2.4 Respondents Awareness of Status of Occupied Land

Many of the respondents interviewed felt that their developments/activities did not fall within the Catchment. When asked whether they were aware that their developments or the activities they were undertaking fell within the catchment, 107 (51%) answered in the negative and 14.3% did not know whether their developments formed part of it and so did not know they had encroached. However, 73 people or 34.7% knew that they were occupying a portion of the catchment.

It became necessary to find out why so many (107) did not know that they were occupying the catchment since many of the respondents (110) were said to be indigenes who are supposed to know the status of the land they are occupying. Further probe revealed that these people felt that the dam was far away from where they were occupying and so there could be no way their occupied portions formed part of the catchment. Many communities generally did not know the actual boundaries of the catchment area since there is nothing physical to show and many

had not seen the map of the area before. Even if a map was to be shown to them, many could not interpret such maps to know the extent of the catchment area.

Table 5.6 Respondents Awareness of the Status of Occupied Land

Community	Yes	No	Don't Know	Total
Nyankyerenease	5	44	3	52
Ohwim	5	13	7	25
Abrepo	40	17	8	65
Essaase	12	2	1	15
Kokoso	1	19	4	24
Bokankye	5	4	3	12
Atafua	0	8	4	12
Nwabi	5	0	0	5
Total	**73**	**107**	**30**	**210**
Percentage %	***34.7***	***51.0***	***14.3***	***100***

Source: Field Survey, 2011

Other issues that emerged from the study include the fact that 40 people out of the 65 respondents from Abrepo and 12 out of 15 respondents from Essaase communities, respectively knew that they were occupying portions of the catchment but were doing so with reasons. For the people of Essaase, many of them were farming in the study area and to them there was no way their activities could affect the dam. Those of Abrepo had been assured by the chief that the Court had ruled in their favour and that the government had released those portions to them. This is of course an untrue statement since the Court had not dealt with such issue.

For the respondents from Nwabi, all five knew that they were within the catchment. The Nwabi community was totally affected by the acquisition and was to be relocated elsewhere. However, the people refused to move. The result was that since the area is low-lying and was also the spill-off zone for the dam, the community has been noted to be having perennial flooding leading to the washing away of most of the buildings.

5.3 Factors Engendering the Encroachment

So many reasons were advanced to justify the encroachment. These included the following:

5.3.1 Non-Payment of Compensation

Seventy-seven (77) constituting 48.7% out of the 158 respondents of those aware of the encroachment were of the opinion that the non-payment of compensation may have accounted for the encroachment. The respondents believed that the non-payment of compensation clearly contradicts Article 20 of the 1992 Constitution which provides that compulsory acquisition of property by the State shall only be made under a law which makes provision for the prompt payment of fair and adequate compensation. An opinion leader for example, in Nyankyerenease (11/10/2011 said, "*it is very cheating to be denied access to your own land while no adequate compensation has been paid. Meanwhile, they seem to have taken so much they possibly did not need, so why should we be denied of our livelihood while the land goes waste.*"

The issue of compensation payment is as a result of lack of the legal understanding of the law at the time. The Ashanti Administration Ordinance (1902) Cap 110 which was used for the acquisition required that no compensation be paid. Per Section 29 (5), no compensation was to be allowed for any land so taken except for growing crops or in respect of disturbance of or interference with any buildings, works or improvements on or near the land taken. Thus, the acquisition of the Owabi land was without the payment of compensation for the land itself. The 1992 Constitution that provides for compensation does not also operate retrospectively to affect the acquisition.

Table 5.7: Factors Engendering Encroachment in the Catchment

Community	Non-Payment of Compensa Tion	No Alternative Livelihood	Land Lying Idle	Land given Back by the Court	Unsuitable Alternative for Settlement	Lack of Supervision	Portion given for farming	Total
Nyankyerenease	11	5	2	0	0	1	0	**19**
Ohwim	14	3	2	0	3	0	2	**24**
Abrepo	21	2	0	31	0	0	0	**54**
Essaase	2	1	0	0	0	1	10	**14**
Kokoso	17	0	1	2	1	0	0	**21**
Bokankye	6	3	1	0	0	0	0	**10**
Atafua	5	1	1	3	0	1	0	**11**
Nwabi	1	0	0	0	4	0	0	**5**
Total	**77**	**15**	**7**	**36**	**8**	**3**	**12**	**158**

Source: Field Survey (2011)

5.3.2 Lack of Alternative Livelihood for the Indigenes

As a result of the acquisition, most of the communities were rendered almost landless. Many people in the area, before the acquisition engaged in farming as a source of livelihood. After the acquisition, they were however allowed to farm in the non-critical zones of the catchment, to a limited extent. Considering the fact that the population of the communities around the catchment keeps on increasing resulting in pressure on land, there is additional requirement for space to ensure their livelihoods, yet no alternative economic activity was provided them. Hence, their continuing reliance on subsistence farming and the need for more land. Many have also resorted to sand winning, and parceling out and selling lands within the catchment for residential developments as a source of income. The following is a comment made by a participant during a Focus Group discussion at Bokankye:

Box 1

Our community is developing at a faster rate with more youngsters having no livelihoods. Our population has overgrown its boundaries and there is an urgent need for land for housing and other economic activities to sustain livelihoods. Meanwhile, the government has not bothered to get work for our youngsters so if the land is lying idle and it can be put to good use, fair enough, we will use it. We don't want the youth to be idling about, to involve themselves in criminal activities. So if they can farm, win sand and even build to get a living, I think it is okay with me.

(An Indigene Participant, 11/08/2001)

5.3.3 Land Lying Idle

A large portion of the acquired land lies idle. It is indeed the view of some members of the communities, that the entire stretch of land acquired for the Waterworks was too large and that is why it has not been fully utilised. To some the area reserved had become the abode for criminals especially the stretch between Atafua and Ohwim along the Kumasi-Barekese road. Thus, if those areas are put to productive use, it would help curb the criminal activities in the area and more importantly put the land into the highest and best use, hence the encroachment.

5.3.4 Misinterpretation of the High Court Injunction Order

Discussions and interviews with the respondents especially at Kokoso and Abrepo portions of the catchment area suggest that most developers were of the opinion that the land had been given back to the original landowners by the High Court. This is because the chiefs have succeeded in convincing the developers that the Court had

given a Judgment in their favour, thus the stoppage of the demolition of the buildings by the Lands Commission and the KMA and the rebuilding of all demolished houses while new areas have been allotted for residential buildings. This has contributed immensely to the encroachment in the study area. In fact, out of the 158 respondents, 36 were of the view that those lands had been released to the chiefs by the government.

5.3.5 Improper Boundary Demarcation

Though many (158) in the study area knew about the encroachment phenomenon, they were not aware that the portions they were occupying were truly part of the catchment area. Surprisingly, some of the indigenes were not even aware they were occupying part of the catchment. This is contained in Table 5.6 above, where some of the indigenes were not even aware that they were occupying the catchment. This is partly due to the fact that the boundary of the catchment is not clearly defined. There is nothing physically on the ground that clearly demarcates the area. Though Ghana Water Company Limited claimed to have demarcated the boundary with pillars some few years ago, none seems to be there especially at the built encroached portions.

5.3.6 Improper/Unsuitable Alternative for Settlement

After the acquisition of the site, two communities- Nwabi and Ohwim were to be moved out of the area and resettled elsewhere outside the acquired area. However, these communities refused to move since they did not like the area they were to be resettled. Knowing the danger and the threat these communities might face if they were to remain there, alternative sites within the non-critical zone of the catchment

area were allotted to them. The result was that as the population of the people in the area increased, it became difficult to restrict these communities from developing beyond the land allotted them, leading to more encroachment. This was the case with the Nwabi community which also become worse of due to the constant flooding in the area. Thus, in the 1990s, Ghana Water Company Limited decided to resettle the community at the original site for the Abrepo community before the acquisition.

However, the chiefs and elders of Abrepo community misunderstood this action and reasoned that they could equally take back their land and put up their own buildings if it was possible to resettle Nwabi Community in the area where they were displaced. Thus, that intervention escalated the spate of the encroachment within the catchment area.

5.3.7 Release of Lands by the Authorities for farming

After the acquisition of Owabi catchment area, the communities whose lands were acquired were allowed to farm in the non-critical zone on licence basis. However, with time the people took these areas to be part of their lands and with time began to put up permanent dwellings.

5.3.8 Lack of Protection of Acquired Lands

With every acquisition, the acquiring agency/institution has the responsibility to manage and protect the land after acquisition. In the case of the Owabi catchment area, it was specifically acquired for Ghana Water Company Limited (GWCL) for the purpose of Waterworks to ensure potable water supply to the people of Kumasi and its environs. Thus, it was the main responsibility of GWCL to see to its proper

supervision and management. According to GWCL, until the encroachment situation became alarming, they did not have any management control program in force. Thus, the land was left uncontrolled and unmanaged. The services of patrol men were only engaged when the situation got out of hand and even with that their services are only limited to the Wildlife reserve. People especially the chiefs have therefore taken advantage of the situation to encroach on the land since it has been left unprotected.

5.3.9 Lack of Public Education

Many developers seem to be ignorant of the true situation on the ground mostly due to lack of education on the part of the beneficiary authority. This is supported by about 51% of the community respondents (see table 5.6) who claim they did not know they were encroaching on the catchment. Indeed interactions and discussions further revealed that people are not even educated on the need to check or conduct official searches at the Lands Commission to know the status of lands being offered them before going into any transactions. Many would not have acquired those lands if they truly knew that the lands were part of the catchment. Many encroachers were thus misled into thinking that there was no problem with those lands and that they were available for building and other purposes.

5.4 Effects of Encroachment on Sustainable Management of the Catchment

5.4.1 Non-Enforcement of Land Use Plan and Building Regulations

a) Land Use Plans: The impact of the encroachment is such that, it has presented the institutions entrusted with the management of the catchment area with the difficulty of enforcing land use planning in the area. The enforcement of

approved plan and building regulations is the responsibility of Kumasi Metropolitan Assembly (KMA) and Atwima District Assembly. These are to ensure that planning conforms to what has been approved, i.e. a reservation for the continuous supply of water. Any other use apart from the purpose for which it was acquired is considered as unauthorised, thus constituting an encroachment. Developments found in the catchment are mainly residential units without reservations for the provision of social amenities such as schools, sanitary areas, hospitals, children's park, etc. This has presented the planning authorities with the difficulty in enforcing land use planning in the area.

b) Building Regulations: The encroachment has also made it impossible to enforce building regulation in the area. Before any development takes place, it is required that the proposed developer obtains both development and building permit from the district planning authorities by submitting the drawings of the proposed development. A committee will examine and assess the drawings against the requirements of security, sanitary facilities, and the materials for construction. However, the developments in the catchment have been put up without permit and hence without the technical advice by the planning authorities.

The study revealed that about 74% of developments did not have permits; only 17% claim to have permits. However, checks at the two district Assemblies- KMA and Atwima Nwabiagya revealed that no permit had been given on any development within the catchment. The encroachment makes it difficult to prepare planning schemes in the area. According to the Planning Officer for Atwima Nwabiagya, even though there has been intense pressure from an organized group of land owners and landlords to grant permit to them,

their requests have not been honoured. Many developers have been deceived by certain unscrupulous officials from the Assembly into thinking that by the mere fact that they have acquired or bought the building jackets from the Assembly, it is enough to constitute a development permit on the land.

As to whether or not developers have leases or licences covering their grants, only eleven (11) answered in the affirmative. However, only three (3) produced unregistered deeds of transfers to back their claims. Further checks from the Kumasi Lands Commission revealed that none of the plots was covered by either a lease or a license.

5.4.2 High Cost of Water Production

The reservoir of late has come under considerable pressure from the encroachment due to human activities in the area. According to GWCL, studies it conducted in August 1999 showed that the tributary streams receive a lot of effluents from refuse dumps, latrines and storm water drainage. The study revealed that the rivers and streams within the catchment area were heavily polluted. Thus, the reservoir suffers from algal bloom especially in the dry season, causing serious water treatment problems. The resultant effect is the high cost of acquiring more copper sulphate to dose into the water downstream of the abstraction point to control algal growth on the filters.

5.4.3 Reduction in the Production Capacity of the Dam

The Owabi Dam was built to produce a total of twelve (12) million gallons of water a day but it currently produces only about three (3) million gallons a day to supplement that of the Barekese Dam in the provision of pipe-borne water for

residents of Kumasi and its environs. The clearing of the forest and vegetation cover that protect the streams and tributaries that leads to the dam has resulted in rapid evaporation of water in them because of the intense sunlight, thereby reducing the volume of water in the dam. The resultant effect is that it has contributed in the reduction of the production capacity of the dam.

5.4.4 Reduction in the Amount of Revenue Collected

Since the developments within the catchment are unauthorised, and hence illegal, no property rates are levied and collected from these developments. Hence, KMA and Atwima Nwabiagya Assemblies lose revenues supposed to be collected from these properties as property rates. Yet services such as waste collection are rendered.

CHAPTER SIX

SUMMARY OF FINDINGS, RECOMMENDATIONS AND CONCLUSION

6.1 Summary of Findings

The following findings and observations are made from the study.

6.1.1 Acquisition and Compensation issues

The Ashanti Administration Ordinance, 1902 (Cap 110) which was used for the acquisition of the Owabi catchment area provided for compensation for only buildings, structures and growing crops but did not make provision for compensation for the land.

6.1.2 Level of Encroachment

- Encroachment in the catchment started over two decades ago but became more pronounced in 1997.
- Various forms of encroachments identified in the catchment include buildings, farming, sand winning, fishing and logging but buildings however dominate.
- A demolition exercise carried out in 1998 failed to have effect due to a High Court Injunction Order leading to a rebuilding of demolished structures because the chiefs had given owners of such buildings wrong interpretation of the injunction order to mean judgment in their favour.
- Due to lack of education, some residents are unaware that their activities within the catchment constitute encroachment. This is reinforced by the absence of physical boundary marks.

6.1.3 Factors Leading to the Encroachment

Contributory factors leading to the encroachment in the Owabi catchment included the non-payment of compensation, lack of alternative sources of livelihood for the Indigenes, idle land, the perception that land had been given back to original landowners by the Court, improper boundary demarcation, lack of education, etc.

6.1.4 Problems Encountered by Stakeholder institutions in the Management of the Catchment

The Stakeholder institutions in charge of the management of the catchment are confronted with problems related to the ongoing encroachment itself, imposition of the injunction order on the demolition, little or no coordination among the stakeholder institutions, negative political influence, and lack of personnel/logistics.

6.1.5 Effects of Encroachment on Sustainable Management of the Catchment

The encroachment has had a negative impact in the sustainable management of the catchment which include the following:

- The non-enforcement of land use plan and building regulations. None of the illegal developments had a lease/licence on land or permit.
- There are complaints of high cost of production of potable water because of high treatment cost as a result of high pollution of the water downstream to control algal growth on the filters.
- Sequel to the above and also due to the reduction in the volume of water in the dam as a result of the clearance of the vegetative cover, there has been reduction in the production capacity of the dam.

- Though services such as waste collection are rendered in the area, no revenue by way of property rates was collected since imposing such levy would mean endorsing the illegality (unauthorised developments). This had led to the reduction in the revenue to be derived from such developments within the district/metropolis.

6.2 Recommendations

6.2.1 Need for Injunction Order on Continuous Development

The High Court Order restraining GWCL from further demolishing was misunderstood and led to continuous building and rebuilding. It is necessary for GWCL then to also seek a counter injunction to stop the continuous development of the catchment. An injunction order is crucial to save the dam.

6.2.2 Promotion of Education and Sensitisation of Public

The public needs to be educated and sensitised on the negative impact the encroachment is having on the production and supply of potable water. The public needs to be educated on the negated effects of their activities and the production cost and the ability or capacity to produce enough potable water. In addition, the public needs to be educated on the need to conduct official searches at the Lands Commission to verify the status of any land before they go ahead with any land transactions.

This education could be done through the media such as prints, radio stations, televisions, information vans and dramas using the local language of the people. Also, voluntary youth groups from within the surrounding communities

could be educated to interact and explain to people how their future could be threatened by their behaviour of encroaching on the reserved lands.

6.2.3 Need for Management Technical Committee

The Stakeholder institutions led by GWCL need to consult with the Asantehene, occupant of the Golden Stool to set up a joint management Technical Committee to see to the permanent resolution of the on-going encroachment in the catchment. Membership of such a Committee should include the chiefs, residents and the management institutions with a view to undertaking a holistic assessment of land management within the catchment.

6.2.4 Need for Proper Demarcation of the Area

Linked to the above is the need for proper boundary demarcation of the remaining section to be maintained by GWCL. All stakeholders' interests should be brought on board with wider consultations in order to make compliance and enforcement easier. Where necessary, GWCL may perfect titles to land that are not within the critical zone of the catchment.

6.2.5 Participatory Land Management Team

There is need for a permanent land management team to be tasked ensuring the proper and efficient management of the reserve. Even though GWCL is the leading agency, all the Stakeholder institutions should be included, and the chiefs and elders of the communities around the catchment should be included as well in the management team. This will help address further encroachment in the reserve.

6.2.6 Community Employment and Provision of Social Services

Many of the indigenes expressed the concern that there was no economic activity in their respective communities and that the initial agreement to employ some of the indigenous people into the Company has been reneged by GWCL. It is recommended that the Company as a matter of policy should employ the indigenes who qualify into the Company.

Again, as is required by any organisation which undertakes a project in a particular area to ensure social responsibility, the Company must provide social amenities such as schools, road construction and free water supply. A special scholarship package could be instituted for the communities whose lands had been taken for the water project. It is believed that when the above is done, it would make those communities feel that they are really benefitting from the project.

6.2.7 Enforcement of Land Management Laws

The general non-enforcement or weak enforcement of laws is the bane of the encroachment. Prevention, they say, is better than cure. Preventing the encroachment in the first place is preferable to demolishing structures. Laws must be enforced within the reserve by punishing those who flout the laws. Thus, land management laws which regulate land-use and building regulations should be strictly enforced by the land management institutions in order to ensure sound land management and development control.

For the Land Management institutions to be able to effectively enforce the law, they need to be well resourced with the requisite logistics and personnel. A needs assessment would be necessary and periodic in-service training for personnel would improve performance.

6.2.8 Co-operation and Co-ordination of Stakeholder Institutions

Land and environmental control agencies as well as utility providers complement each other. Thus, for effective enforcement of land management laws towards ensuring sound and efficient land management and development and environmental control of the catchment and public lands in general, Stakeholder institutions need to coordinate and cooperate by complementing each other's role in law enforcement.

6.3 Conclusion

Owabi catchment of late has come under serious pressure since encroachment in the area is becoming alarming. The site has been sub-divided, allocated and developed mostly for private residential and farming purposes, and the toll of the encroachment on its management cannot be over-emphasised.

Investigation into the encroachment phenomenon in the Owabi catchment, the effects of encroachment on sustainable land management, the problems Stakeholder institutions are confronted with in the management of the area, and the policy recommendations of resolving the encroachment were undertaken. The study revealed among others that the Ashanti Administration Ordinance, 1902 Cap 110 used for the acquisition of the Owabi catchment did not make provision for compensation payment for the land and that the encroachments which are mostly in the form of buildings started over two decades ago. Factors that seem to have given way to the encroachment included the non-payment of compensation, lack of alternative livelihood for the indigenes, and improper boundary demarcation. The encroachment phenomenon has had negative effects on the management of the catchment resulting in the non-enforcement of the land use plan and building regulations, high cost of water production and reduction of government's revenue.

Some recommendations have been made for resolving the encroachment issue and improving the sustainable management of Owabi catchment area. These include the seeking of injunction order to halt the continuous development in the catchment, educating and sensitizing the public on the environmental impact such developments have on the dam, the setting up of a management technical committee inclusive of the chiefs and members of the communities to see how best the encroachment could be managed, the adpotion of participatory land management team and considering indigeness who qualify for employment in the Ghana Water Company Limited. Even though the recommendations are peculiar to the Owabi catchment, it could equally be applied to other catchments. This is also a caution to the land management institutions that they need to be proactive and not let the situation get out of hand before stringent actions are taken. There is the need to have a national programme like the establishment of a permanent land management team to properly manage and protect catchment lands and this should include all interest groups.

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APPENDIX 'A'

KWAME NKRUMAH UNIVERSITY OF SCIENCE AND TECHNOLOGY

DEPARTMENT OF LAND ECONOMY

MPHIL LAND MANAGEMENT RESEARCH

TOPIC: THE EFFECTS OF ENCROACHMENT ON SUSTAINABLE PUBLIC LAND MANAGEMENT: A CASE STUDY OF THE OWABI CATCHMENT AREA IN KUMASI

OWNER/DEVELOPER/OCCUPANT

1. Sex ……
2. Age ...……
3. Location of community/village…...…….
4. Do you come from this community? Yes ☐ No☐
5. What are the importance of the dam?.....
   ……
6. Do you know why some land have been reserved around the dam which is called the catchment area?.....
   .....
7. Do you think it was necessary for the government to acquire all that stretch of land for the protection of the dam?.....
   ……
8. Are you aware of any encroachment activity in the in the Catchment area?

   Yes ☐ No☐
9. When did you notice this encroachment activity?.....
10. What forms of encroachment have you noticed?

    Farming ☐

    Building ☐

    Sand winning☐

    Logging☐

    Others, specify; …….
11. What do you think are the reasons for this encroachment?
12. Who do you think are the perpetrators of the encroachment activities?.....
13. When did you notice this encroachment activity?.....
14. What type of development do you have on the land? Farming ☐

    Building/structure☐ Others, specify; …….
15. From whom did you acquire the land?.....
16. How much did you pay for the land?.....

17. What was the previous use of the land?.....
18. When did you start the development/activity?.....
19. Were you affected by the demolition exercise in 1998?.....
20. If yes why did you rebuild it?.....

21. Do you have a permit on the land? Yes ☐ No☐
22. If no why?.....
23. Do you have a lease on the land you occupy?.....
24. If no, why?.....
25. Are you aware that the area you are occupying forms part of the Owabi catchment area? Yes ☐ No☐
26. Do you know that the use to which you have put the land into can have negative effect on the dam? Yes ☐ No☐
27. If yes, can you name some?.....
28. If yes, what are you doing about it?.....
29. What do you think can be done to prevent people from further developing the area acquired for the project and to correct the encroachment?
……...
30. In your opinion what do you think your community can do to protect and sustainably manage the catchment area?.....
31. Comment……

Thank you very much for your attention

APPENDIX 'B'

KWAME NKRUMAH UNIVERSITY OF SCIENCE AND TECHNOLOGY

DEPARTMENT OF LAND ECONOMY

MPHIL LAND MANAGEMENT RESEARCH

TOPIC*: *THE EFFECTS OF ENCROACHMENT ON SUSTAINABLE PUBLIC LAND MANAGEMENT: A CASE STUDY OF THE OWABI CATCHMENT AREA IN KUMASI

CONCERNED INSTITUTIONS

a) Ghana Water Company Ltd
b) Lands Commission

1. Name of Institution……
2. What role does your institution play in the management of the Owabi Catchment Area?
   I. …….
   II.…….
   III.……
3. What role did you play in the acquisition of the catchment?
   .....
4. (a) When was this area of land acquired?.....
   (b) What was the original size of the Owabi Catchment area?.....
   (c) What is the current acreage?.....
5. What was the purpose for which the Owabi Catchment area was acquired?
   ……..
6. Which legal instrument was used to acquire the lands? ……
7. Is the acquisition process complete?.....
8. How many communities/villages were affected (displaced) by the acquisition?
   Totally displaced:
   Partially displaced:
9. Were the displaced communities/villages given alternative places to settle?

10. Was compensation paid? Yes ☐ No☐
11. If no, why……..…
12. If yes, which type of compensation?

    Crop compensation☐

    Building/structure compensation☐

    Land compensation☐
13. Whom was compensation payment made to?
    Chiefs ……..……..
    Indigene land owners ……..……..
    Occupiers .....

14. Is the institution aware of any encroachment activity within the catchment area?

    Yes ☐ No☐

15. When did you notice this encroachment activity?
16. What forms of encroachment have you noticed?

    Farming ☐

    Building ☐

    Sand winning☐

    Logging☐

    Others, specify; ……...

17. What is the extent of the encroachment?.....
18. Which portion of the catchment has been massively encroached upon?.....
19. How has your institution reacted to the encroachment situation?.....
20. Are there any measure(s) the institution has put in place to secure the protection and sustainable management of the catchment?.....
21. Is your institution the only body entrusted with the protection and management of the catchment? Yes ☐ No☐
22. If no, which other bodies are involved?
    I.……...
    Major Role……..
    II.……
    Major Role……..
    III……
    Major Role……..
23. How do these bodies coordinate in the exercise of the protection and management of the catchment?.....
    ……
24. What factors in your opinion have given rise to the spate of encroachment within this area?.....
25. Has there ever been any registration of individual plot of land acquired within the catchment?.....
    .....
26. What steps has the institution taken to correct the issue of encroachment and to curb further and future encroachment within the reserve?.....
    ……..
27. What are some of the problems you face in the management of the catchment?
    ……..
28. In your opinion who is behind the allocation of portions of the reserved land to developers?.....
29. What do you think can be done to protect and sustainably manage the catchment area?.....
30. Further comments……..…

Thank you very much for your attention

APPENDIX 'C'

KWAME NKRUMAH UNIVERSITY OF SCIENCE AND TECHNOLOGY

DEPARTMENT OF LAND ECONOMY

MPHIL LAND MANAGEMENT RESEARCH

TOPIC: THE EFFECTS OF ENCROACHMENT ON SUSTAINABLE PUBLIC LAND MANAGEMENT: A CASE STUDY OF THE OWABI CATCHMENT AREA IN KUMASI

SUPPORTING INSTITUTIONS

a) Game and Wild life Department
b) Friends of Rivers and Water Bodies
c) Environmental Protection Agency

1. Name of Institution ……
2. What role does your organisation play in the management of the Owabi Catchment Area?
   I. ……
   II. ……
   III. ……
3. What role did you play in the acquisition of the catchment?.....
   ……
4. What was the purpose for which the Owabi Catchment area acquired?
   ……
5. Is your organisation aware of any encroachment activity in the Owabi catchment area? Yes ☐ No ☐
6. When did you notice this encroachment activity?.....
7. What forms of encroachment have you noticed?

   Farming ☐

   Building ☐

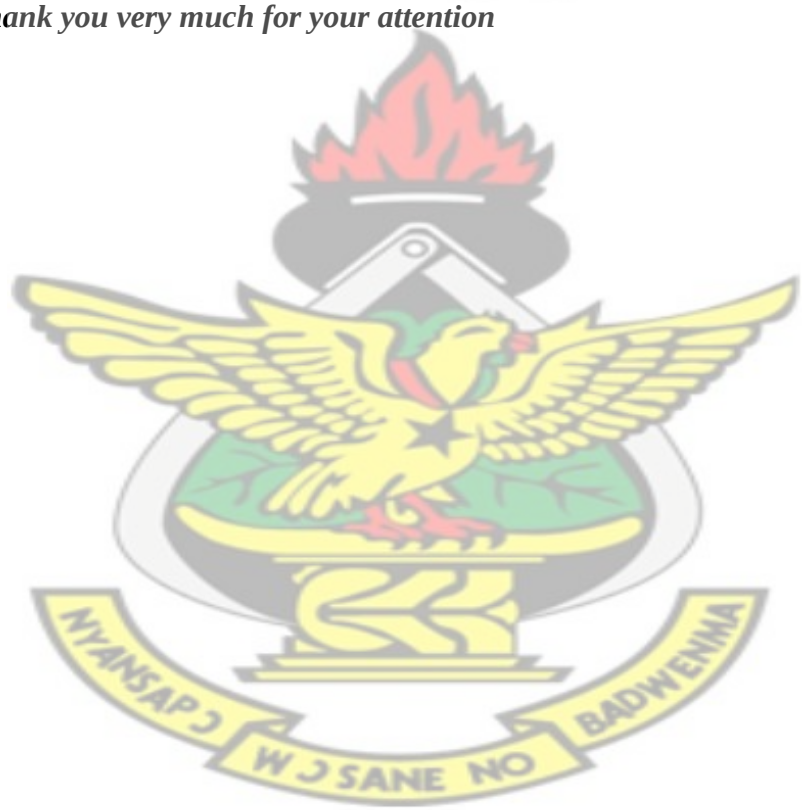
   Sand winning ☐

   Logging ☐

   Others, specify; ……,…….…….
8. What is the extent of the encroachment?.....
9. How does the encroachment affect the operations of the organisation?
   ……
10. How has your organisation reacted to the encroachment situation?
    ……
11. Is your organisation the only body entrusted with the protection and management of the catchment? Yes ☐ No ☐

12. If no, which other bodies are involved?
    I……
    Major Role……..
    II……
    Major Role……..
    III……
    Major Role……..
13. How do these bodies coordinate in the exercise of the protection and management of the catchment?.....
14. What factors in your opinion have given rise to the spate of encroachment within this area?.....
15. What do you think can be done to protect and sustainably manage the catchment area?.....……
16. Further comments……

Thank you very much for your attention



APPENDIX 'D'

KWAME NKRUMAH UNIVERSITY OF SCIENCE AND TECHNOLOGY

DEPARTMENT OF LAND ECONOMY

MPHIL LAND MANAGEMENT RESEARCH

TOPIC: THE EFFECTS OF ENCROACHMENT ON SUSTAINABLE PUBLIC LAND MANAGEMENT: A CASE STUDY OF THE OWABI CATCHMENT AREA IN KUMASI

PLANNING AUTHORITIES

a) Town and Country Planning Department
b) Kumasi Metropolitan Assembly
c) Atwima Nwabiagya District Assembly

1. Name of Institution……..…
2. What role does your institution play in the management of the Owabi Catchment Area?
   I. ……
   II.……
   III.……
3. What role did your institution play in the acquisition of the catchment?
   ……
4. Is your institution aware of any encroachment activity in the Owabi catchment area? Yes ☐ No☐
5. When did you notice this encroachment activity?.....
6. What forms of encroachment have you noticed?

   Farming ☐

   Building ☐

   Sand winning☐

   Logging☐

   Others, specify; …….
7. How has your agency reacted to the encroachment situation?.....……..
8. Is your institution the only body entrusted with the protection and management of the catchment? Yes ☐ No☐
9. If no, which other bodies are involved?
   I.……
   Major Role……..
   II.…….
   Major Role……..
   III.…… ……

Major Role……..

10. How do these bodies coordinate in the exercise of the protection and management of the catchment?.....
11. What factors in your opinion have given rise to the spate of encroachment within this area?.....
12. What steps has the institution taken to correct the issue of encroachment and to curb further and future encroachment of the catchment?.....……..
13. What are some of the problems you face in the management of the catchment? ……..
14. In your opinion who is behind the allocation of portions of the reserved land to developers?.....
15. What do you think can be done to protect and sustainably manage the catchment area?.....
16. Further comments……
    ……

***Thank** you very much for your attention*

APPENDIX 'E'

KWAME NKRUMAH UNIVERSITY OF SCIENCE AND TECHNOLOGY

DEPARTMENT OF LAND ECONOMY

MPHIL LAND MANAGEMENT RESEARCH

TOPIC: THE EFFECTS OF ENCROACHMENT ON SUSTAINABLE PUBLIC LAND MANAGEMENT: A CASE STUDY OF THE OWABI CATCHMENT AREA IN KUMASI

CHIEFS

1. Stool Name of Chief……..
2. Name of Stool……
3. What is the size of land within your jurisdiction?.....
4. Was your land affected by the acquisition?.....
5. If yes, how much of it was taken?.....
6. Were you given an alternative place to settle? Yes ☐ No☐
7. If yes, where……
8. Was compensation paid? Yes ☐ No☐
9. If yes, which type of compensation?

   Crop compensation☐

   Building/structure compensation☐

   Land compensation☐

10. Was compensation fair and adequate? Yes ☐ No☐
11. If no, what efforts have you made so far to address the issue to the higher authorities? .....
12. Do you think it was necessary for the government to acquire all that stretch of land for the protection of the dam?.....
13. How important is the reservoir to your community? .....
14. Are you aware of any encroachment activities around the reservoir?

    Yes ☐ No☐

15. When did you notice this encroachment activity?.....
16. What forms of encroachment have you noticed?

    Farming ☐

    Building ☐

    Sand winning☐

    Logging☐

Others, specify; …….

17. What do you think are the reasons for this encroachment?.....
    ……
18. Who do you think are the perpetrators of the encroachment activities?.....
19. Do people farm very close to the dam? Yes ☐ No ☐
20. If yes, what types of farming do they practice?.....
21. Does the community benefit from the dam?.....
22. Has the construction of the dam enhanced the lives of your people or worsened it?.....
23. What social or economic problems do you face in connection with the creation of the dam?.....
24. What efforts have you put in place to secure the protection and of the management of the dam? ……
25. What do you think can be done to correct the issue of encroachment and to curb further and future encroachment within the reserve? …….
26. In your opinion what do you think can be done to protect and sustainably manage the catchment area? ……..
27. Further comments……..

***Thank** you very much for your attention*

APPENDIX 'F'

KWAME NKRUMAH UNIVERSITY OF SCIENCE AND TECHNOLOGY

DEPARTMENT OF LAND ECONOMY

MPHIL LAND MANAGEMENT RESEARCH

TOPIC: THE EFFECTS OF ENCROACHMENT ON SUSTAINABLE PUBLIC LAND MANAGEMENT: A CASE STUDY OF THE OWABI CATCHMENT AREA IN KUMASI

OPINION LEADERS

1. Sex ……
2. Age: ……
3. Location of Community/Village ……
4. Do you come from this village? Yes ☐ No☐
5. If no, how long have you been living here?.....
6. Was this village/town affected by the acquisition? Yes ☐ No☐
7. If yes, how much of it was taken?.....
8. What kind of activity was taking place on the land before the acquisition by the government?.....
9. Did the government give the people an alternative place to settle?

   Yes ☐ No☐

10. Was compensation paid? Yes ☐ No☐
11. If yes, which type of compensation?

    Crop compensation☐

    Building/structure compensation☐

    Land compensation☐

12. Was compensation fair and adequate? Yes ☐ No☐
13. If no, what effort has this village/town make so far to address the issue of compensation to the higher authorities?.....
    ……
14. Do you think it was necessary for the government to acquire all that stretch of land for the protection of the dam?.....
15. How important is the reservoir?.....
    ……..……
16. Are you aware of any encroachment activities around the reservoir?

    Yes ☐ No☐

17. When did you notice this encroachment activity?.....
18. What forms of encroachment have you noticed?

    Farming ☐

    Building ☐

    Sand winning ☐

    Logging ☐

    Others, specify; ……
19. What do you think are the reasons for this encroachment?.....
    ……
20. In your opinion who has been allocating portions of the reserved land to developers?.....
    ……
21. Do people farm very close to the dam? Yes ☐ No ☐
22. If yes, what types of farming do they practice?.....
23. What benefits does this community derive from the dam?.....
24. Is there any problem which has arisen because of the construction of the dam?
    ……
25. What efforts has the community put in place to secure the protection and of the management of the dam?.....
26. In your opinion what do you think can be done to correct the issue of encroachment and to further curb future encroachment within the reserve?
    ……
27. In your opinion what do you think can be done to protect and sustainably manage the catchment area?.....
28. Further comments……

Thank you very much for your attention

APPENDIX 'G'
PICTURES

Plate 1 (a)

Plate 1 (b)

Plate 1 (c)

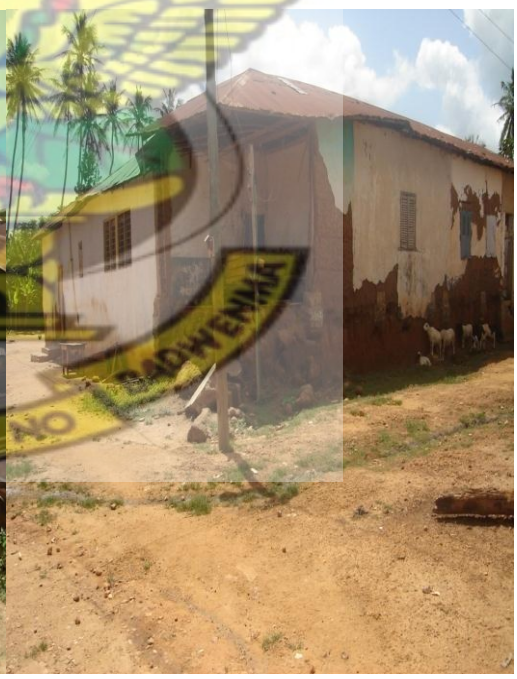


Plate 1 (d)

Plates (a) - (d): Show Conditions of buildings at Nwabi Community as a result of perennial flooding of the Area
Source: Field Survey (2011)

Plate 2 (a) Plate 2 (b)

Plate 2 (a) and 2 (b) Show on-going developments at Kokoso Community very close to River Esufo, a tributary of River Sukobri

Plate 3 (a) Plate 3 (b)

Plate 3(a) and 3 (b) Show on-going developments abutting the Forest reserve boundary at Atafua

Source: Field Survey (2011)