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KNUST  
TITLE:

**SUAME REDEVELOPEMENT, AUTOMOBILE REPAIRS – LIGHTWEIGHT  
(ASIAN CARS).**

BY:

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B.Sc. ARCHITECTURE



**MAY, 2009.**

**TITLE:**

**SUAME REDEVELOPEMENT, AUTOMOBILE REPAIRS CENTRE  
LIGHTWEIGHT (ASIAN CARS)**

BY

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B.Sc. Architecture

A design thesis report submitted to the Department of Architecture,  
Kwame Nkrumah University of Science and Technology  
in partial fulfilment of the requirements for a

**POST-GRADUATE DIPLOMA IN ARCHITECTURE**

MAY, 2009

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## DECLARATION

I hereby declare that this project is my own work towards the Post-Graduate Diploma in Architecture and that, to the best of my knowledge , it contains no 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 this publication.

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## DEDICATION

This book is dedicated to my family.



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## **ACKNOWLEDGEMENTS**

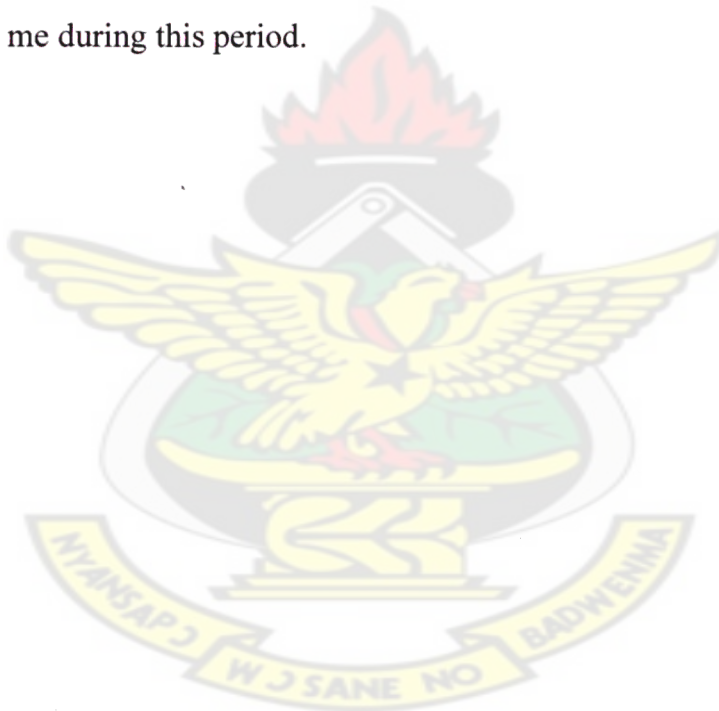
I will give thanks to God Almighty for his strength, wisdom and inspiration for carrying out this project.

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## **ABSTRACT**

Suame Magazine is an automobile industrial slum in Kumasi-Ashanti Region, providing a chaotic working environment for about 20,000 artisans, dealing in automobile repairs, spare parts, fabrications of metal works and scraps.

It is an engineering hub in Kumasi which provides automobile services, repairs and trains a substantial number of artisans in the Ashanti Region with others coming from different regions of Ghana.

Over the years, Suame Magazine has become choked, a visual nuisance and an industry centre where environmental protection standard does not exist. This is as a result of an unplanned urban centre, leading to an urban sprawl.

Suame Magazine is therefore a challenge for architects and city planners to redesign the area to comfortably accommodate the existing number of artisans, provide them with a cleaner working environment, equipped them with modern automobile technologies and are mindful of the environmental protection agency standards.

The failure of architects and city planners to intervene now will be a signed death warrant of Suame Magazine in the near future.

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## CHAPTER ONE

### INTRODUCTION

#### 1.0 Background Information

The automobile industry has become an irreplaceable sector of the global world connecting towns, cities, countries and continents. This industry comes with the manufacture of automobiles and its subsequent routine maintenance and repair services. The automobile industry employs millions of people worldwide. Suame is a major suburb in Kumasi, the second largest city in Ghana and the regional capital of Ashanti Region. "Suame Magazine" (SM) is an automobile industrial urban sprawl, which was not planned for and has been left to evolve on its own. This has created the problem of poor environmental standards, traffic jams, overcrowding and serious security problems. Suame Magazine is an automobile market for drivers and car owners across Ghana especially in the Ashanti region and neighbouring countries. About 20,000 artisans, auto mechanics, salespeople and garage operators – these groups keep the engine workforce of Suame Magazine running. Over the year, Suame magazine has gained a reputation for solving any automobile technical problem. A lot of the artisans in the automobile industry in Ghana have little or no formal education, however, they service and repair about 80% of the cars on our roads. It has therefore become imperative now more than ever to redevelop Suame Magazine with the proper planning and equip them with the modern technology to upgrade themselves and meet the challenges of the future.

## **1.1 Problem Statement/Justification**

Suame Magazine is presently over crowded with a total population of 20,000 artisans occupying a land size of 2,371,899 m (585.85 acres). Suame Magazine (SM) is an industrial urban sprawl, which was not plan for and has been left to evolve on its own. This has created the problem of congested working space, poor environmental standards, traffic jams, and serious security problems. Environmental Protection Agency standards are non- existence at the Suame magazine. With the growing rate of Kumasi at of 6% per annum, it has become paramount to redevelop Suame Magazine to accommodate the future increase in artisans.

## **1.2 Objectives**

1. To design and plan to accommodate the existing vehicular and human congestion at Suame magazine and anticipate for future expansion.
2. To provide a sustainable and cleaner industrial centre and minimize the negative environmental impact on the environment by reducing the carbon emissions and treating the dirty oil before disposal.
3. To provide proper coordination between artisans and share technical knowledge.
4. To provide a secure environment for artisans and their customers to transact their business.

## **1.3 Definition of Scheme**

1. Documentation of existing situation at Suame Magazine. That is, understanding their way of life in terms of social culture, economy and their physical infrastructure.
2. Designing a proposal that can best solve the problems at Suame Magazine.
3. Selecting and designing for the automobile repairs industry (lightweight), dealing with Asian cars.

## **1.4 Scopes**

The research is limited to the fitting area of Suame Magazine. The fitting area compresses of Mechanics, Car electricians and Fabricators. For the purpose of this research, the search will be limited to the Mechanics and Electricians at the fitting area. The aim of this research is to target the ordinary artisans who have just the basic education.

## **1.5 Target Group**

1. Automobile Artisans and specialists who are already working at the Suame Magazine.
2. Automobile Artisans and specialists who have interest in occupying workshops at Suame Magazine.
3. Food vendors who are already operating at the Suame magazine and those who have interest to occupy a space at the Magazine.
4. Spare part dealers who are already transacting business at Suame Magazine and those who have interest to occupy a space at the magazine.

## **1.6 Client**

SUAME MAGAZINE INDUSTRIAL DEVELOPMENT ORGANISATION (SMIDO).

## **1.7 Funding**

The major financiers of this project include

1. Government of Ghana
2. Suame Magazine Industrial Development Organization
3. Kumasi Metropolitan Assembly

## **1.8 Site Location**

Suame Magazine, in Kumasi-Ashanti Region, Ghana.

## **1.9 Research Methodology**

This deals with the methods and the instruments used for the study. The researcher employed instruments such as Internet, University libraries, news papers, magazines and journals for both primary and secondary data. Questionnaires were administered to both apprentices and masters for information.

Personal observation

Interviews and questionnaires

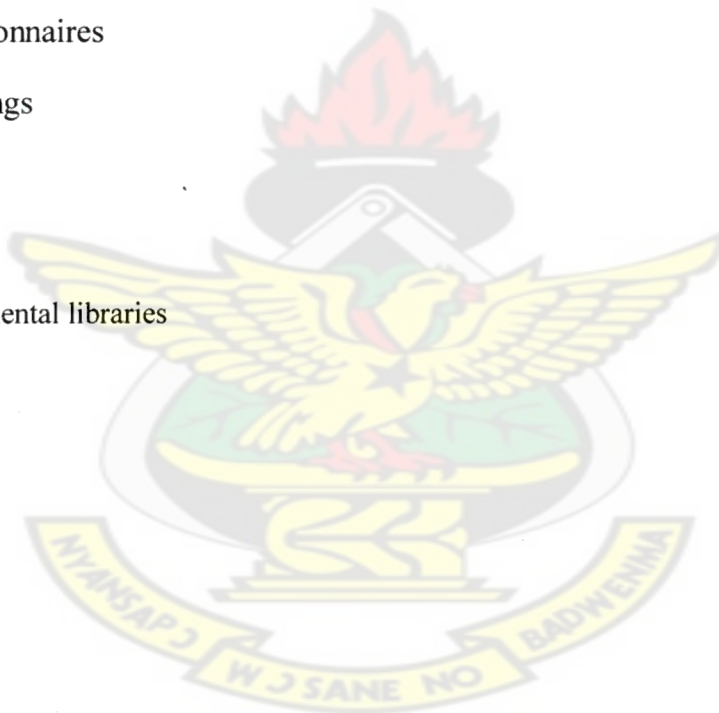
Photographic recordings

Measured Drawings

Literature Reviews

University and Departmental libraries

Case Studies





## **CHAPTER TWO**

### **LITERATURE REVIEW**

#### **2.0 OVERVIEW**

This chapter is a review of published and unpublished related literature works of the study area.

This will enhance the theoretical base of the project.

#### **2.1 CITY PLANNING**

The unified development of cities and their environs. For most of its history, city planning dealt primarily with the regulation of land use and the physical arrangement of city structures, as guided by architectural, engineering, and land-development criteria. In the mid-20th century it broadened to include the comprehensive guidance of the physical, economic, and social environment of a community. Elements characteristic of city planning include (1) general plans that summarize the objectives of (and restraints on) land development; (2) zoning and subdivision controls that specify permissible land uses, densities, and requirements for streets, utility services, and other improvements; (3) plans for traffic flow and public transportation; (4) strategies for economic revitalization of depressed urban and rural areas; (5) strategies for supportive action to help disadvantaged social groups; and (6) guidelines for environmental protection and preservation of scarce resources. City planning is conducted by governments on all levels—local, county, regional, state, and federal—and by private groups. It is also a subject of university-level study. Professional societies include the American Planning Association, the Canadian Institute of Planners, and in the United Kingdom, the Royal Town Planning Institute.<sup>(1)</sup>

## 2.2 HISTORY OF CITY PLANNING

The emphasis on planning broadened during the Greek and Roman eras. The Greek architect Hippodamus of Miletus planned important Greek settlements such as Priene and Piraeus (Pireás).

Called the father of town planning, he emphasized a geometric design for towns. Religious and civic citadels were oriented so as to give a sense of aesthetic balance; streets were arranged in a grid pattern; and housing was integrated with cultural, commercial, and defense facilities.

The Romans continued these principles. Their designs for monumental temples, arches, gymnasiums, and forums are classic examples of city planning based on strict regard for symmetry. Their colonial cities, planned as military camps called *castras*, were laid out with a grid of streets surrounded by rectangular or square defensive walls. After the fall of the Roman Empire, cities declined in population and importance. From the 5th to the 14th century AD, medieval Europe planned towns around castles, churches, and monasteries, with informal street arrangements.<sup>(2)</sup>

## 2.3 20<sup>th</sup> CENTURY CITY PLANNING

The U.S. and Britain responded similarly to the need to improve the living conditions in cities. Their initial action was to regulate the sanitary conditions and density of tenement housing. A movement then arose in both countries for a more comprehensive, long-term approach, a process of city planning that would examine and control the many forces affecting modern cities. The 1893 World's Columbian Exposition in Chicago featured a planned "White City" that stood in

vivid contrast to the squalor of most urban settlements. In the U.S. it sparked the “City Beautiful” movement, which emphasized municipal grandeur embodied in handsome new public buildings, park systems, and main thoroughfares. Important steps were taken in the early 20th century to formalize and legalize city planning. In the bellwether year 1909 Britain passed a Town Planning Act, which authorized local authorities to prepare “schemes” controlling new development. In 1909, in the U.S., the First National Conference on City Planning was conducted; this was the first of a series of annual meetings, which continue even today, that proved influential in coalescing support for city planning. Also in 1909 the American architect Daniel Burnham published his *Plan of Chicago*, a design that was groundbreaking in its regional perspective and comprehensive integration of transportation systems, parks, streets, and other facilities. City planning received further support during subsequent years. In 1919 Britain made the preparation of planning schemes obligatory for many local governments, and in 1921 Canada enacted a city-planning law. Other European countries and Australia also undertook city planning. In the U.S. during the 1920s local planning increased significantly. In 1920 approximately 100 cities had municipal planning commissions; by 1930 the number was almost 500. This growth can be accounted for in various ways. In 1928 the U.S. Commerce Department published a Standard City Planning Act that provided communities with a convenient procedural model for their planning efforts. The U.S. Supreme Court decision in *Euclid v. Ambler* (1926) removed any lingering doubts about the legality of zoning, a critical end product of city planning. (The first zoning ordinance in the U.S. had been enacted by New York City in 1916.) Other influences leading to the increased acceptance of city planning were the rapid growth of cities during the 1920s and the ensuing pressures on transportation facilities and public services. During the Great Depression of the 1930s regional and national governments intervened more



forcefully in city planning. To foster economic development in depressed regions, the United Kingdom authorized the appointment of special commissioners with wide-ranging powers.

Britain, France, the Netherlands, and other European countries carried out extensive public-housing projects. In the U.S. President Franklin D. Roosevelt, under his New Deal program, established a Public Works Administration to deal with capital improvements, a National Planning Board to coordinate long-range development, and a program that produced three greenbelt towns. The Tennessee Valley Authority was created to prepare and implement a sweeping regional plan. Federal housing insurance and public <sup>(3)</sup>

**2.4 MODERN CITY PLANNING**

City planning in the U.S. and other countries broadened in the late 1960s beyond a purely physical orientation. In its modern form, city planning is an ongoing process that concerns not only physical design but also social, economic, and political policy issues. As a fabric of human organization, a city is a complex weave. On one level it consists of the arrangement of neighborhoods, industry, and commerce according to aesthetic and functional standards and the provision of public services for them. On another, perhaps more important, level it also comprises (1) the background, education, work, and aspirations of its residents; (2) the general functioning of the economic system to which they belong, as well as their positions in and rewards from that system; and (3) their ability to make or influence the policy decisions that affect their daily lives. Viewed from this perspective, city planning requires more than a narrow specialist who can develop and implement a physical plan. More general skills and activities are also needed. They include (1) the collection and analysis of data about the city and its

population; (2) research into the need for and availability of social services; (3) the development, evaluation, coordination, and administration of programs and timetables to supply these services; (4) programs for economic and housing development and redevelopment—not only planning, but also packaging, financing, and carrying out the development, establishing public and private partnerships, and so forth; and (5) effective use of political activity and citizen participation to influence the character of and give support to development programs. <sup>(4)</sup>

## 2.5 DEVELOPMENT CONTROLS

Land is allocated and private activities are coordinated with public facilities by means of zoning ordinances and subdivision regulations. A zoning ordinance governs how the land may be used and the size, type, and number of structures that may be built on the land. All land within a city is divided into districts, or zones. In these districts certain land uses are allowed by right, and general restrictions on building height, bulk, and use are specified. The zoning regulations carry out the land allocations recommended in the comprehensive plan. Specific locations are given for different types of residences, industries, and businesses. Specific numbers are given for allowable heights of buildings, coverage of a lot, and density. Allowable land uses are specified for each zone, including special conditions such as required off-street parking. Most regulations are termed “matter-of-right”; if the specified requirements are met a permit will be given. Other regulations provide general standards with considerable flexibility in the mixture of building uses or the building design. These require more extensive review before approval. The conversion of raw land (construction on previously undeveloped land) is controlled by subdivision regulations and by site-plan review. These ordinances establish standards of land development by regulating such features as roadway width, drainage requirements, traffic

circulation, and lot sizes. Subdivision regulations and site-plan review guide orderly development, protect prospective and current residents from poorly designed buildings or business districts, and ensure that most of the costs of land conversion are borne by those who will benefit from the development, that is, by the developer and the future residents. Building and housing codes govern the quality and safety of construction of new buildings, as well as subsequent maintenance. In most instances, the codes specify the materials to be used, their minimum quality, and the building components necessary in a structure that is suitable for human occupancy.<sup>(5)</sup>

## **2.6 SOCIAL, ECONOMIC AND ENVIRONMENTAL POLICY**

Although the physical appearance and functioning of the city are the traditional focus of city planning, the city's population and economic resources are an important concern. Thus, contemporary city planning continues to focus on physical design, but also addresses the many long-range social and economic decisions that must be made. A city has social needs and economic capital. The city government acts as a purchasing agent for many services needed by residents and businesses—for example, education, water supply, police and fire protection, and recreation. The quality, character, and efficiency of these services require planning to fit needs and desires with funding, with technological change, and with objectives for physical development. City planning, moreover, should be concerned with providing decent housing (and minimal economic aid) to residents who cannot afford this basic amenity. When local housing is deficient and economic resources permit its upgrading, the city planning department may survey housing conditions and coordinate funding to finance its development and rehabilitation.



The city's economic development and redevelopment also fall within the scope of city planning. Economic development plans make use of a mixture of incentives, technical assistance, and marketing to create jobs, establish new industry and business, help existing enterprises to flourish, rehabilitate what is salvageable, and redevelop what cannot be saved. Economic development, however, must go beyond the enterprise and the facility to reach the workers. In a rapidly evolving technological environment with frequent global shifts in trade relations, skilled workers need new skills and unskilled people need some skills. Job training is a necessary part of development strategy, especially for the city's poor and unemployed citizens. Capital improvement programming is the budgeting tool used by planners to schedule the construction and financing of public works. Capital projects—such as road improvements, street lighting, public parking facilities, and purchase of land for open spaces—must be sorted out and assigned priorities. A program prepared each year sets the priorities for the next six years on projects needed to implement the comprehensive plan and replace the worn out infrastructure. In rapidly growing regions, city planners are constantly faced with public facilities that have become inadequate for future development. In declining areas, economic redevelopment is of prime concern. Before any new capital improvements are scheduled, the condition and viability of the neighborhood must be assessed and strategies for remedy must be adopted. Some declining neighborhoods require vigorous public development; others should be left to available private development. The urban-renewal movement of the 1940s was insensitive to the cyclical ebbs and flows of city neighborhoods. From the 1940s through the 1960s it was believed that if an economic function such as business or industry failed, all that was needed was to crop out the “decay” and clear the land for reuse. In many instances the redevelopment never appeared. The

multiple forces that affect neighborhood changes were ignored or improperly analyzed. City planners now understand that regional, interregional, national, and international economic forces affect a city. They also realize that the effectiveness of plans to bring about a city's continued economic viability depends on the correct analysis and interpretation of these forces. These are the lessons of the shifts in suburban, nonmetropolitan, and interregional economic patterns that took place in the 1960s and '70s.

City planners today are becoming ever more involved with environmental concerns. Environmental planning coordinates development to meet objectives for clean air and water; removal of toxic and other wastes; recycling of resources; energy conservation; protection of wetlands, beaches, hillsides, farmlands, forests, and floodplains; and preservation of wildlife, natural reserves, and rivers. Historic preservation strives to keep important buildings and places as part of the permanent environment and uses them to finance the maintenance costs. Although city planners may report to mayors, city managers, or other officials, their true clients are the people and businesses of the city. Their plans must reflect the interests and priorities of these two groups, and the programs that are implemented must, at the same time, help the city survive and maintain the quality of life that these groups desire. Political astuteness is required in order to ensure that neighborhood programs and priorities will be properly perceived by local, state, and federal officials and will stand a chance for implementation.<sup>(6)</sup>

## 2.7 THE FUTURE OF CITIES AND CITY PLANNING

City planning in the last decades of the 20th century is becoming increasingly involved in setting or executing policy about public services and with delivering these services. Since it is apparent that resources are limited and that global events affect the future of each community, city planning must be done within a framework of national and international planning for mutually sustainable development. The capital infrastructures of many older cities need replacement. Public schools and city hospitals are a shadow of formerly dominant city institutions. For half a century the American public was mesmerized by the outer reaches of metropolitan areas. The force of this attraction has been so strong that when travel distances to jobs in the central city became excessive, companies moved and took the jobs to the suburbs. In the late 20th century, however, the newest generation of adults—younger than most city residents, more mobile, frequently childless, and having greater freedom in their living relationships—has become enamored of city life. Cities are responding by directing public services and capital improvements toward upgrading the quality of life in those areas that have unique attractions for this new population. In this setting, different groups of city residents have become more sophisticated in pursuing their special interests. They are better informed, understand laws and procedures have greater political skills, and are more militant and persistent. They have learned that planning brings order to change and, thus, they want to influence the planning. In turn, city planners are attempting to balance the demands of competing interests into a dynamic community consensus sufficient to allow decisions to be made. In the future, city planning will continue to work under conditions of scarce urban economic resources and will constantly be faced with competing priorities—of neighborhoods, interest groups, businesses, and residents.



The targeting and delivery of adequate public services will pose serious problems during the rest of the 20th century. As cities search for a revision of their role, they will undergo recurring adjustments. It is the task of city planning to minimize the impact that changing cycles have on the city's residents and businesses. <sup>(7)</sup>

## 2.9 FROM OLMSTED'S "THE UNPLANNED GROWTH OF CITIES"

What accommodations for recreation can we provide which shall be so agreeable and so accessible to the great body of citizens, and which, while giving decided gratification, shall also cause those who resort to them for pleasure to subject themselves, for the time being, to conditions strongly counteractive to the special enervating conditions of the town? In the study of this question, all forms of recreation may, in the first place, be conveniently arranged under two general heads.... Games chiefly of mental skill, as chess, or athletic sports, as baseball, are examples of means of recreation of the first class, which may be termed *exertive* recreation; music and the fine arts generally of the second or *receptive* division. In one way or another it is sure to be constantly operating upon those millions on millions of men and women who are to pass their lives within a few miles of where we now stand. To what extent it shall operate so as to develop health and virtue will, on many occasions, be simply a question of opportunity and inducement. And this question is one for the determination of which for a thousand years we here today are largely responsible. For this purpose neither of the forms of ground we have heretofore considered are at all suitable. We want a ground to which people may easily go after their day's work is done, and where they may stroll for an hour, seeing, hearing, and feeling nothing of the bustle and jar of the streets—where they shall, in effect, find the city put far away

from them. We want the greatest possible contrast with the streets and the shops and the rooms of the town which will be consistent with convenience and the preservation of good order and neatness. We want, especially, the greatest possible contrast with the restraining and confining conditions of the town, those conditions which compel us to walk circumspectly, watchfully, jealously, which compel us to look closely upon others without sympathy. Practically, what we most want is a simple, broad, open space of clean greensward, with sufficient play of surface and a sufficient number of trees about it to supply a variety of light and shade. This we want as a central feature. We want depth of wood enough about it not only for comfort in hot weather but to completely shut out the city from our landscapes. The word 'park,' in town nomenclature, should, I think, be reserved for grounds of the character and purpose thus described. Not only as being the most valuable of all possible forms of public places but regarded simply as a large space which will seriously interrupt cross-town communication wherever it occurs, the question of the site and bounds of the park requires to be determined with much more deliberation and art than is often secured for any problem of distant and extended municipal interests. The park should, as far as possible, complement the town.

Openness is the one thing you cannot get in buildings. Let your buildings be as picturesque as your artists can make them. This is the beauty of a town. Consequently, the beauty of the park should be the other. It should be the beauty of the fields, the meadow, the prairie, of the green pastures, and the still waters. What we want to gain is tranquility and rest to the mind. Mountains suggest effort. But besides this objection there are others of what I may indicate as the housekeeping class. It is impossible to give the public range over a large extent of ground of a highly picturesque character, unless under very exceptional circumstances, and sufficiently guard



against the occurrence of opportunities and temptations to shabbiness, disorder, indecorum, and indecency that will be subversive of every good purpose the park should be designed to fulfill.

A park, fairly well managed near a large town, will surely become a new center of that town.

With the determination of location, size, and boundaries should therefore be associated the duty of arranging new trunk routes of communication between it and the distant parts of the town existing and forecasted.

These may be either narrow informal elongations of the park, varying say from 200 to 500 feet in width and radiating irregularly from it, or if, unfortunately, the town is already laid out in the unhappy way that New York and Brooklyn, San Francisco and Chicago are, and, I am glad to say, Boston is not, on a plan made long years ago by a man who never saw a spring carriage and who had a conscientious dread of the Graces, then we must probably adopt formal parkways. They should be so planned and constructed as never to be noisy and seldom crowded, and so also that the straightforward movement of pleasure carriages need never be obstructed, unless at absolutely necessary crossings, by slow-going, heavy vehicles used for commercial purposes. If possible, also, they should be branched or reticulated with other ways of a similar class, so that no part of the town should finally be many minutes' walk from some one of them; and they should be made interesting by a process of planting and decoration, so that in necessarily passing through them, whether in going to or from the park, or to and from business, some substantial creative advantage may be incidentally gained. It is a common error to regard a park as something to be produced complete in it, as a picture to be painted on canvas. It should rather be planned as one to be done in fresco, with constant consideration of exterior objects, some of them quite at a distance and even existing as yet only in the imagination of the painter. The New

York legislature of 1851 passed a bill providing for a park on the east side of the island. Afterward, the same legislature, precipitately and quite as an afterthought, passed the act under which the city took title to the site of the greater part of the present Central Park. The question of the relative value of what is called offhand common sense, and of special, deliberate, businesslike study, must be settled in the case of the Central Park, by a comparison of benefit with cost. During the last four years, over 30 million visits have been made to the park by actual count, and many have passed uncounted. From 50,000 to 80,000 persons on foot, 30,000 in carriages, and 4,000 to 5,000 on horseback have often entered it in a day. Among the frequent visitors, I have found all those who, a few years ago, believed it impossible that there should ever be a park in this republican country—and especially in New York of all places in this country—which would be a suitable place of resort for 'gentlemen.' They, their wives and daughters, frequent the park more than they do the opera or the church. There are many men of wealth who resort to the park habitually and regularly, as much so as businessmen to their places of business. Of course, there is a reason for it, and a reason based upon their experience. As to the effect on public health, there is no question that it is already great. The testimony of the older physicians of the city will be found unanimous on this point. Says one: 'Where I formerly ordered patients of a certain class to give up their business altogether and go out of town, I now often advise simply moderation and prescribe a ride in the park before going to their offices, and again a drive with their families before dinner. By simply adopting this course as a habit, men who have been breaking down frequently recover tone rapidly and are able to retain an active and controlling influence in an important business, from which they would have otherwise been forced to retire. I direct schoolgirls, under certain circumstances, to be taken wholly, or in part, from their studies and sent to spend several hours a day rambling on foot in the park. 'The lives of women and

children too poor to be sent to the country can now be saved in thousands of instances by making them go to the park. During a hot day in July last, I counted at one time in the park eighteen separate groups, consisting of mothers with their children, most of whom were under school age, taking picnic dinners which they had brought from home with them. The practice is increasing under medical advice, especially when summer complaint is rife. The much greater rapidity, with which patients convalesce and may be returned with safety to their ordinary occupations after severe illness, when they can be sent to the park for a few hours a day, is beginning to be understood. The addition thus made to the productive labor of the city is not unimportant. The park, moreover, has had a very marked effect in making the city attractive to visitors, and I thus increasing its trade, and causing many who have made fortunes elsewhere to take up their residence and become taxpayers in it—a much greater effect in this way, beyond all question, than all the colleges, schools, libraries, museums, and art galleries which the city possesses. It has also induced many foreigners who have grown rich in the country, and who would otherwise have gone to Europe to enjoy their wealth, to settle permanently in the city. <sup>(8)</sup>

## **2.10 ORIGIN OF SUAME MAGAZINE**

Suame Magazine is an artisanal engineering cluster spanning 20 square miles located in Kumasi, Ghana. The term ‘Magazine’ is a historical reference to military armories (or magazines) that were located in the area during colonial times. Suame Magazine originally emerged in the 1930s and experienced significant population growth in the 1950s and 1960s as a result of the removal of businesses from the city centre of Kumasi. Growth of the Magazine was spurred again in the mid-1970s when restrictions were imposed on importation of new vehicles and parts. While



some large enterprises suffered, the small enterprises of Suame Magazine filled the gap that the policy created by crafting spare parts that were originally imported.

In 1983, under the guidance of the World Bank and International Monetary Fund, the government of Ghana launched the Economic Recovery Programme as an effort to reduce Ghana's debt and improve trading practices. As part of this initiative, the restriction on importation of vehicles and parts were removed. Some large enterprises were able to re-establish themselves but now competed against the small enterprises in Suame Magazine which had developed expertise. <sup>(9)</sup>

Suame Magazine at the present has a working population of over 20,000 artisans.

### **The industrial Breakthrough of Suame Magazine**

As cited on (myjoyonline.com, Thursday 7<sup>th</sup> August 2008, 7:10 GMT) The Suame Magazine Industrial Development Organization (SMIDO), the development unit of Suame Magazine, hassled mechanics at Suame to manufacture chain links to service the mining industry. The chain links, hitherto imported by the mining companies form a key component of the machinery used in the transport of raw materials. The Daily Graphic says when it visited the workshop; the artisans were busily working on offers from the Ghana Bauxite Company (GBC) at Awaso in the Western Region. SMIDO has established a workshop at Suame Magazine, which it intends to turn into a major chain link manufacturing factory. Mr Kwabena Boateng, Manager of the SMIOO Chain Link Workshop said the mining companies he had approached so far had expressed satisfaction with their innovative products in terms of quality and time of delivery. Speaking with the Daily Graphic, Mr Nyaaba-Aweeba Azongo, the consultant to SMIDO, indicated that the chain link project was part of the planning process towards the integration of Suame Magazine into the major economic sectors of the country. He noted that the

prospects of building a modern industrial village for Suame Magazine would remain a tourist exercise, if it were not consciously planned to service the needs of the industrial sectors of the country. According to him, the best social corporate responsibility role the mining companies could play in the country would be to support the development of the largest informal sector of Suame Magazine, which serves as a source of livelihood for many young people in the informal sector. He said the current initiative to build a modern Industrial Village for Suame Magazine would be given a significant boost if the mining companies showed interest in Suame Magazine's products to generate income to support the project. <sup>(10)</sup>

## **2.12 SUAME MAGAZINE INDUSTRIAL DEVELOPMENT ORGANISATION (SMIDO)**

### **Origin of SMIDO**

The Suame Magazine Industrial Development Organization (SMIDO) was formed in 2006 as an umbrella non-governmental organization and development institution for Suame Magazine. Historically, a major challenge for development in the Magazine has been the lack of a single organization that has broad support from various associations and individuals in the community that can act as an entry point for policy interventions and take ownership for ongoing development initiatives. SMIDO has overcome this challenge by unifying the following 12 associations to support SMIDO as their umbrella organization:

- Dynamic Spare Parts Dealer's Association
- Mechanical Association, Ashanti Region
- Ghana Haulage Transport Owner's Association, Ashanti Region
- Kumasi Scraps Dealer's Association
- Condemn Car Dealer's Association, Magazine Region
- Onuado Association

- Fuel Injection Pump Mechanical Association
- Electrical Welders and Fabricator's Association of Ghana
- Big Friend's Mechanical Association
- Suame Magazine Women's Association
- Asafo Mechanical Association, Asafo
- SofoLine Mechanical Association, Kwadaso

The formation of SMIDO was an outcome of an advocacy program organized by the Dynamic Spare Parts Dealers Association (DSPDA) and funded by BUSAC. BUSAC is the acronym for "Business Sector Advocacy Challenge Fund". It is a project funded by DANIDA, DFID and USAID as part of their support to Ghana. BUSAC's goal is "to facilitate the development and growth of a competitive and vibrant private sector by improving the environment in which businesses operate." With broad based support from the associations within Suame Magazine and hundreds of artisans registered as members, SMIDO is a grass roots organization symbolizing the desire of the community to develop Suame Magazine.<sup>(11)</sup>

### **The goals and objectives of SMIDO**

- 1.To bring all stakeholders of Suame Magazine Industrial Estate together for the pursuit of a  
Common development agenda
- 2.Strengthen member associations to play an effective support role to SMIDO
- 3.To co-ordinate and manage the activities of the various mechanical workshops and stores in the  
industrial estate
- 4.To introduce quality control administrative systems into the mechanical workshops and stores in  
the industrial estate



- 5.To establish partnership with technical institutions both within and outside Ghana for training and technical exchange programmes.
- 6.To conduct research and document innovative indigenous technology for institutional training and dissemination .
- 7.Develop and market the technological products and activities of the industrial estate both within and outside Ghana .
- 8.To be the frontline advocates for the development of artisanal engineering in Ghana .
9. To ensure security (job and property), safety precautions and long-term welfare needs of the working population of the industrial estate .
- 10.To streamline procedures for revenue mobilization for the mutual benefit of government and Suame Magazine industrial estate .
- 11 To streamline procedures for youth development to make Suame the core centre for youth. training, industrial attachment and employment centre in Ghana and West Africa .
- 12 To ensure a more appropriate infrastructural development of the industrial estate <sup>(12)</sup>

### **Policy Advocacy**

SMIDO's policy advocacy activities include research, publication and promotion of policy, engagement with media on current events and consultation with the government and development agencies on issues related to Suame Magazine. It includes:

- 1.1st National Industrial Conference on Suame Magazine in November 2006
- 2.Guest participant in a Ministry of Finance & Economic Planning sponsored workshop on cluster-based industrial development held February 2007. The purpose of the workshop was to present research findings on the studies on cluster-based industrial development in Africa and East Asia

- 5.To establish partnership with technical institutions both within and outside Ghana for training and technical exchange programmes.
- 6.To conduct research and document innovative indigenous technology for institutional training and dissemination .
- 7.Develop and market the technological products and activities of the industrial estate both within and outside Ghana .
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and to propose policy options for pro-poor industrial development in Africa.

3. Artisanal engineering representatives and presentation of paper at the National Development Planning Commission (NDPC) consensus building workshop for Ghana's 10 year development Plan in 2007
3. Two TV documentaries of Suame Magazine - TV3 and Metro TV
4. 2007 SMIDO Industrial Policy Blueprint publication and launching in Kumasi by her honorary SMIDO Patron, Miss Joyce Aryee
5. Guests' participants in the Ghana Chamber of Mines expanded Council Meeting in February, 2008. SMIDO presented a paper on collaboration between SMIDO and Mining industry.
6. Partnership trip to the Great KOSA industrial estate of Apostle Kwadwo Safo of Kristo Asafo Fame
7. Official invitation extended to SMIDO by the Trade and Industry Ministry to explore common grounds of cooperation in December 2007
8. Profiling of SMIDO under the Millennium Cities Initiative Kumasi Investment Guide to promote foreign and domestic investment engagement with SMIDO by UNIDO
9. Advocacy of pro-Suame Magazine Incorporation into political parties manifestoes during 2008 Presidential Elections. The objective is to court multi-party support base for Suame Magazine
10. Advocacy for financial support for the establishment of Suame Technical Automatics Engineering Institute Project, a collaborative project with Ghana-Indian Kofi Annan Centre of Excellence in ICT. <sup>(13)</sup>

**2.11 CASE STUDIES**

CASE STUDY ONE

JAPAN MOTORS

(NISAAN, YAHAMA AND FOTON)

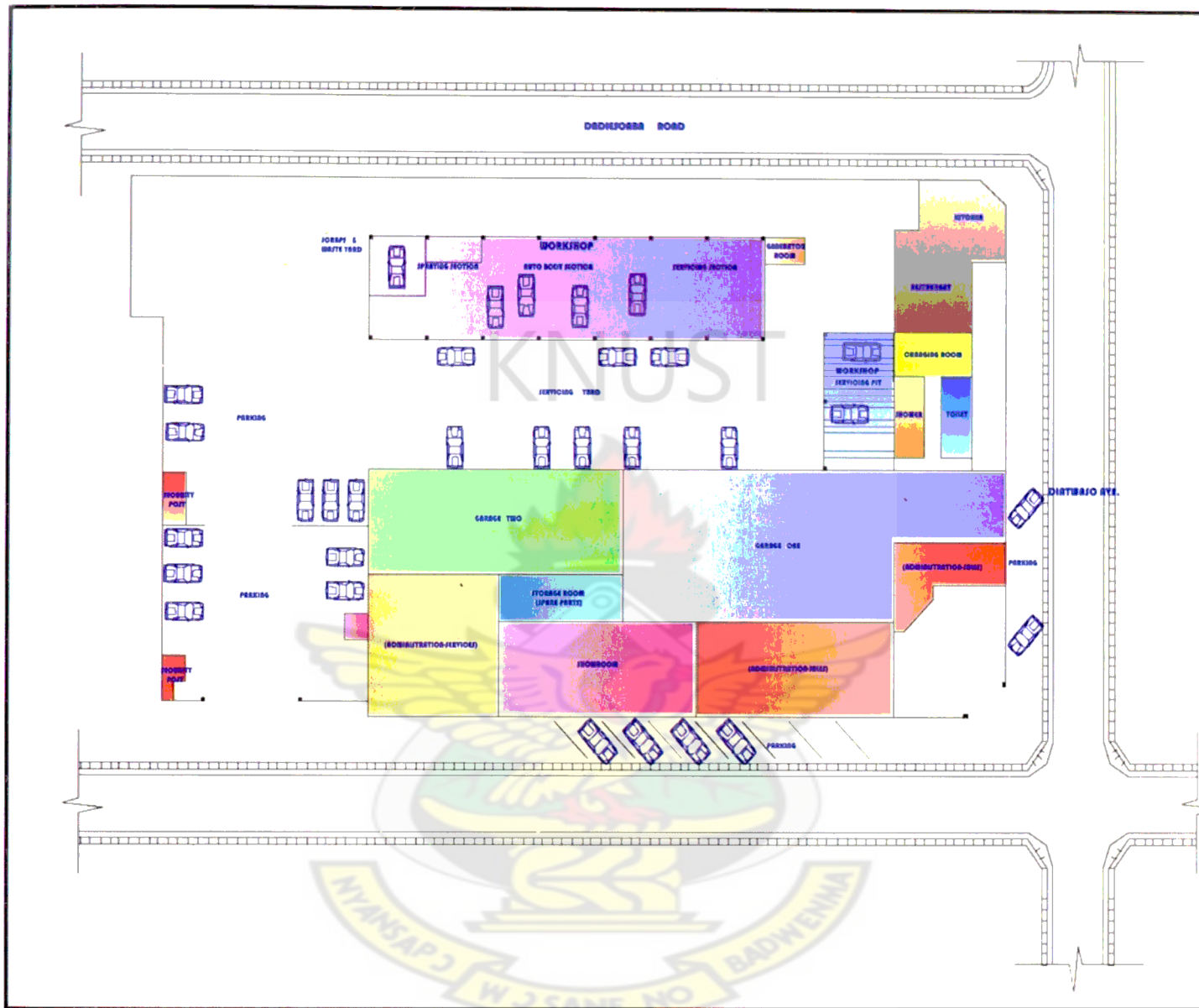
LOCATION: ADUM-KUMASI,GHANA

FACILITIES

- 1. ADMINISTRATION
- 2. SHOWROOM
- 3. GARAGE
- 4.WORKSHOP
- 5. STORAGE (SPARE PARTS)
- 6. RESTAURANT
- 7. CHANGING ROOM
- 8.WASHROOM
- 9. PARKING SPACES



# SCHEMATIC LAYOUT PLAN OF JAPAN MOTORS.



## JAPAN MOTORS

(NISSAN, YAMAHA & FOTON)

LOCATION: ADUM-KUMASI, GHANA.

### FACILITIES

1. ADMINISTRATION
2. SHOWROOM
3. GARAGE
4. WORKSHOP
5. STORAGE (SPARE PARTS)
6. RESTAURANT
7. CHANGING ROOM
8. WASHROOM
9. PARKING

### SCHEMATIC LAYOUT PLAN OF JAPAN MOTORS.



SERVICE YARD WHERE SOME CARS ARE IN LINE WAITING TO BE TAKEN INTO THE WORKSHOP AND WORKED ON.



SCRAPS AND DIRTY OIL ARE KEPT AS WASTE MATERIAL AND SOLD OUT TO THOSE WHO ARE INTEREST.



SECURITY POST AT THE ENTRANCE GATE TO THE SERVICING SECTION TO MONITOR INFLOWS AND OUTFLOW OF PEOPLE AND VEHICLES.



THE SPRAYING OF CARS IS DONE IN A ROOM NOT THE OPEN WORKSHOP. THIS IS TO CONTAIN THE PROCESS UNDER A CERTAIN TEMPERATURE.



JAPAN MOTORS BUILDING WITH SOME OF THEIR CARS BEING EXHIBITED IN FRONT OF THE SHOWROOM.



STAND-BY GENERATOR WHEN THERE IS POWER-OFF.



SERVICING PIT WHICH IS NOT USED FREQUENTLY BECAUSE OF THE MODERN HYDRAULIC LIFT.



CARS AT THE WORKSHOP BEEN SERVICED. THE USE OF SKYLIGHT TO IMPROVE THE ILLUMINATION LEVEL AT THE WORKSHOP.



## ○ JAPAN MOTORS (NISSAN, YAMAHA & HONDA)

LOCATION: ADUM-KUMASI, GHANA.

### FINISHES

#### WORKSHOP

- FLOOR** - REINFORCED CONCRETE WITH SMOOTH FINISH.
- WALL** - CREAM EMULSION PAINT FROM GROUND FLOOR TO ROOFING LEVEL.

#### GARAGE

- FLOOR** - REINFORCED CONCRETE WITH SMOOTH FINISH.
- WALL** - DARK GREY EMULSION PAINT FROM GROUND FLOOR LEVEL UP TO 2m HIGH AND TOPED WHITE EMULSION PAINT TO ROOFING LEVEL.

#### ADMINISTRATION & SHOWROOM

- FLOOR** - CONCRETE WITH SAND-GRANIT FLORED
- WALL** - CREAM EMULSION PAINT FROM GROUND FLOOR TO ROOFING LEVEL.

SCHEMATIC LAYOUT PLAN OF JAPAN MOTORS.



NEW ELECTRONIC LIFT, READY TO BE INSTALLED.



TRANSLUCENT ROOFING SHEETS INCREASED ILLUMINATION LEVEL AT THE WORKSHOP.

### CONCLUSIONS

- THE USE OF ELECTRONIC AND SERVICE PIT MAKE IT POSSIBLE TO WORK WITH OR WITHOUT POWER.
- SKYLIGHTS GREATLY IMPROVE THE ILLUMINATION LEVEL OF THE WORKSHOP DURING THE DAY WITHOUT ANY SUPPORT FROM ARTIFICIAL LIGHTS.
- THE PROVISION OF RESTAURANT HELP SAVE TIME BECAUSE WORKERS DO NOT WALK FOR LONG DISTANCE FOR THEIR LUNCH BREAK.
- SPARE PART STORAGE IS CONFIGURED IN THE SERVICE MANAGER'S OFFICE AND THIS HELP MONITOR THE INFLOW AND OUTFLOW OF SPARE PARTS.
- LIQUID WASTE ARE NOT TREATED BEFORE THEY ARE DISPOSED OFF IN GUTTERS. SOME ARE SOLD TO INTERESTED PARTIES.



CASE STUDY TWO

VODI TECHNIK MOTORS LTD

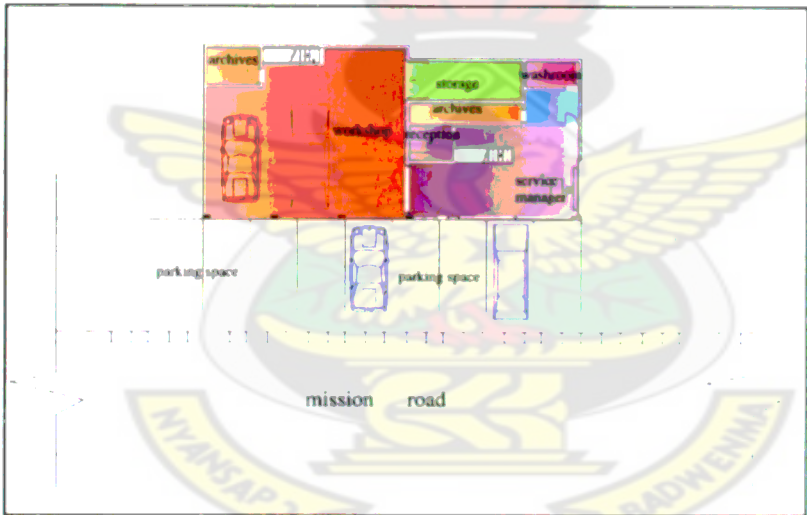
(VW, AUDI AND SKODA CARS)

LOCATION: ADUM-KUMASI, GHANA

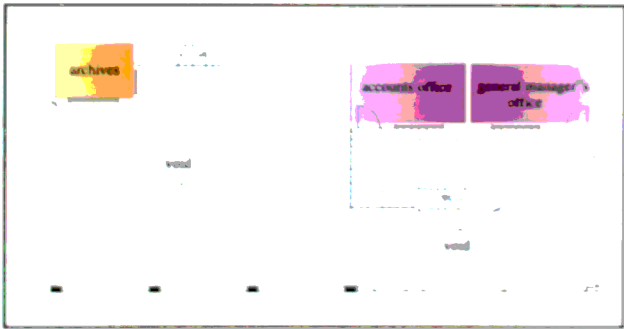
FACILITIES

1. RECEPTION
2. SERVICE MANAGER
3. MANAGER'S OFFICE
4. ACCOUNTANTS OFFICE
5. STORAGE AREA
6. WORKSHOP
7. ARCHIEVES
8. WASHROOMS

SCHEMATIC PLAN OF VODI TECHNIK MOTORS LTD



GROUND FLOOR PLAN



MEZZANINE FLOOR PLAN

**YODI TECHNIK MOTORS LTD**  
(VW, AUDI & SKODA CARS)

LOCATION: ADUM-KUMASI, GHANA.  
ON MISSION ROAD.

**FACILITIES**

- |                        |                 |
|------------------------|-----------------|
| 1. RECEPTION AREA      | 5. STORAGE AREA |
| 2. SERVICE MANAGER     | 6. WORKSHOP     |
| 3. MANAGER'S OFFICE    | 7. ARCHIVES     |
| 4. ACCOUNTANT'S OFFICE | 8. WASHROOM     |



PICTURE OF FACILITY FROM  
THE MISSION ROAD.



GROUND FLOOR PLAN



PICTURE SHOWING THE USE  
OF ELECTRONIC HH CAR LIFT



MEZZANINE FLOOR PLAN



ENGINES PARTS ARE SERVICED ON A  
TABLE AT THE EXTREME END OF THE  
WORKSHOP.



EXTRA PARKING SPACE FOR CARS  
WAITING TO BE SERVICED.



DIRTY OIL IS COLLECTED IN A BOWL  
AND LATER DISPOSED OFF IN GUTTERS.



OFFICES FOR THE FACILITY.



# **YODI TECHNIK MOTORS LTD** **(VW, AUDI & SKODA CARS)**

## **FINISHES**

### **WORKSHOP AND ARCHIVES**

- FLOOR** - REINFORCED CONCRETE WITH SAND-CEMENT SCREED
- WALL** - BLUE OIL PAINT FROM GROUND FLOOR LEVEL TO 1.8m UP, TOPED WITH WHITE EMULSION PAINT TO CEILING LEVEL.
- CEILING** - PLYWOOD CEILING PAINTED IN WHITE
- DOOR** - STEEL ROLLER DOOR

### **RECEPTION AND SERVICE MANAGER'S OFFICE**

- FLOOR** - CONCRETE WITH SAND-CEMENT SCREED
- WALL** - CREAM OIL PAINT FROM GROUND FLOOR LEVEL TO 2m UP, TOPED WITH WHITE EMULSION PAINT TO CEILING LEVEL.
- CEILING** - PLYWOOD CEILING PAINTED IN WHITE
- MEZZANINE FLOOR** - WOODEN BOARDS

## **CONCLUSIONS**

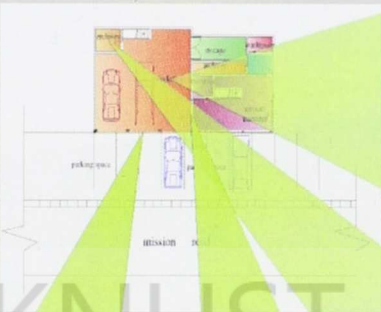
- THERE ARE NO SERVICE PIT BUT ONLY THE USE OF THE ELECTRONIC HH LIFTS.
- LIQUID WASTE ARE COLLECTED AND DISPOSE INTO GUTTERS WITHOUT BEING TREATED.
- ARTIFICIAL LIGHTS ARE ALWAYS ON TO INCREASE THE ILLUMINATION LEVEL
- OIL PAINTS USED ON WALL HELP PREVENT OIL FROM STICKING ON THE WALLS.
- WITH ONLY ELECTRONIC PITS, ANY POWER FAILURE FROM ECG AND THEIR STAND BY GENERATOR WILL COST THEM THE DAY'S WORK.



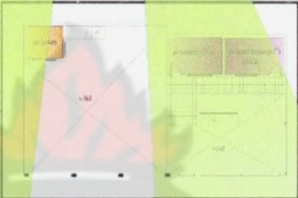
STEEL ROLLER DOORS ARE USED FOR SECURITY REASONS.



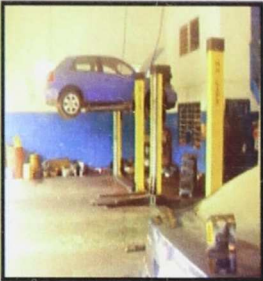
FIRE EXTINGUISHER IN CASE OF A FIRE OUTBREAK.



GROUND FLOOR PLAN



MEZZANINE FLOOR PLAN



INTERIOR PERSPECTIVE OF WORKSHOP



ARCHIVES AND CHANGING ROOM

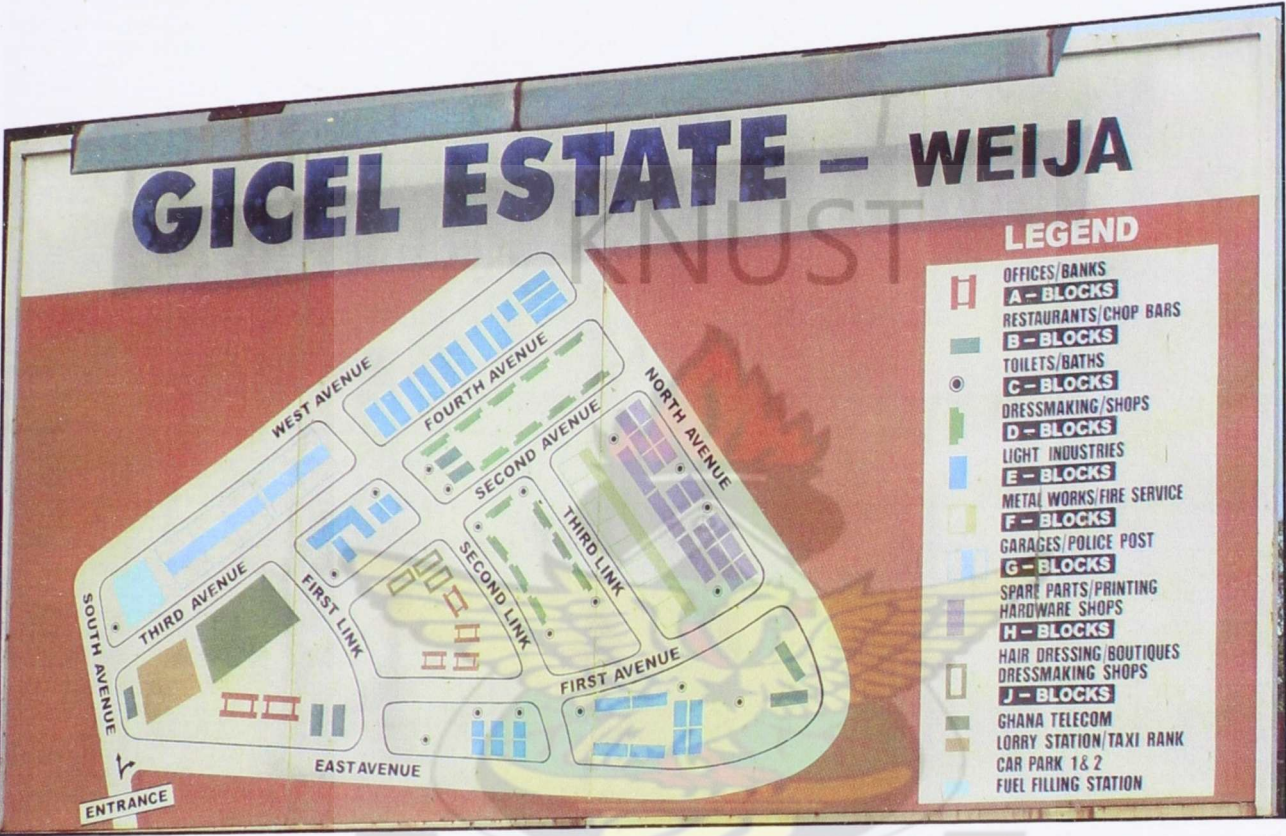


CASE STUDY THREE

GICEL ESTATE

(LOCATION: WEIJA-ACCRA, GHANA)

LAYOUT OF GICEL ESTATE



# GICEL

LOCATION: WEJA-SOBE, GAMBIA

GICEL is the acronym for the Ghana Industrial and Commercial Estate Scheme.

GICEL is a Private Sector/Leasing Company owned wholly by the Social Security and National Insurance Trust (SSNIT), 1997, as means of its stable but multi-purpose built, self-contained estate, but as a concept is being together as one site, small and medium scale industries and commercial concerns to their common facilities, which special attention to be given to the needs of small and medium scale producers. It also greatly links any sector to the output of others, which facilitates their own production.

The Estate would also enable SSNIT to improve the level of contribution to the national sector.

The main objective of GICEL is to help ease the necessity of Ghana small to a more productive contribution from the current retail arrangement.

The project was inaugurated by Rt. Honorable Sir Bakare (Vice President of the Republic of Ghana) on Monday, December 12 to 1997.

## FACILITIES

The figures below represent the number of facilities as the management, their availability and preferred occupancy.

1. Total number of facilities: 1,411

2. Effective occupancy as the Estate as at March 1998: 40%

3. Facilities number of retail units available. Priority given to businesses in the following areas:

- \* Businesses that conduct accessible extension profiles for workshop and store
- \* Businesses that manufacture and process agricultural products (fruit juice, cereals, herbal products etc).
- \* Small scale garments factories.
- \* Domestic/ household made free wood, glass or metal

Facility

Type of Business Occupancy

No. of Facilities

BLOCK 1

(Offices, Banks, Clinic) 141

BLOCK 2

(Workshops / Shop Base) 81

BLOCK 3

(Vehicles) 19

BLOCK 4

(Manufacturing, Offices, Base) 324

BLOCK 1

(Light, Industrial, Commercial)

141

BLOCK 2

(Auto Mechanic/ Repair, Metal Fabrication) 81

BLOCK 3

(Auto Mechanic/ Repair, Metal Fabrication, Auto Body Repair, Paint Office, Police Post) 19

BLOCK 4

(Workshops, Spare Parts, Printing/ Publishing) 324

BLOCK 5

(Manufacturing, Auto repairing, Self-employed) 100



NETS BROWNING WORKSHOPS



JANZEN RECEPTION AND TRAVEL AGENT



OFFSHORE SERVICE AND LAMIN TRADING SERVICE



## 2.12 TECHNICAL STUDIES

Different samples of equipment and car parts were studied and measured to help determine the average square areas which will be needed for the artisans to operate comfortable.



HYDRAULIC CAR LIFT (MAX. WEIGHT-2500kg)



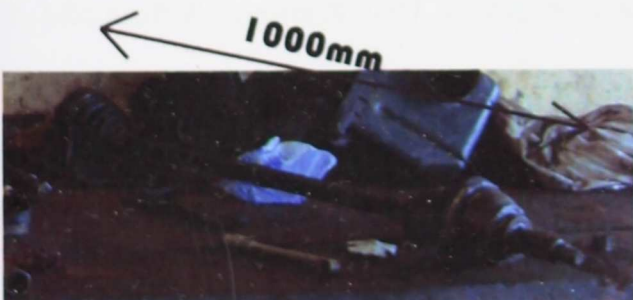
FRONT-RIGHT DOOR OF A TOYOTA TERCEL



ENGINE OF A NISSAN PRIMERA



SHAFT OF HYUNDAI SALON CAR



AXLE OF A KIA PRIDE SALOON CAR



BUMPER OF A TOYOTA TERCEL

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## **CHAPTER THREE**

### **RESEARCH METHODOLOGY**

#### **3.1 Overview**

This deals with the methodology and the instruments used for the study. The chapter is organized under such topics as research design, library research, and population, sampling techniques and sample instrumentation, validity, reliability, administration of questionnaire, primary and secondary sources of data, data collecting procedures and data analysis plan.

#### **3.2 Research Design**

Best J.W. (1981) examines Qualitative Descriptive Research as a method, which uses quantitative methods to describe the data. It is also used in describing, recording, analyzing and interpreting conditions that exist. It involves some types of comparison or contrast and attempts to discover relationship between existing non manipulated variables. Quantitative Data analysis was used to describe the results of the study.

The descriptive research allowed the researcher in the collection of data and the analysis of the data using quantitative data analysis. The method enabled the researcher to produce a descriptive and analytical report that can be interpreted and put into good use. This Qualitative Descriptive Research was used to design the questionnaire in a structured and semi-structured questionnaire to collect data.

3.3 University and departmental libraries

The Researcher will visit the following Libraries to find information on the study; The KNUST Main Library, The College of Architecture Library, The Department of Architecture Library, (KNUST), Department of Planning library and Institute of housing and settlement studies library will be visited for the research. In all the libraries, great efforts will be made to collect the secondary data. The information will help me review the related literature.

3.4 Population

The target population for the study comprises all technicians in the fitting area of the Suame Magazine. Out of the many technicians, those at the fitting area will be selected for the study.

- (A) Master technician in the auto repair industry at the Suame Magazine.
  - (B) Apprentice technician in the auto repair industry.
- 
- |         |            |   |  |                  |
|---------|------------|---|--|------------------|
| 1.      | Category A | - | Master technicians in the repair industry..... | (200)            |
| 2.      | Category B | - | Apprentices technician .....                   | (1000)           |
| Total = |            |   |  | 1200 Respondents |

The total population for this research will therefore be One hundred (1200) respondents.

3.5 Sample and Sampling Technique

The sample of the study would be collected from auto fitting area , out of a target population of about two thousand (2000) people, thousand two hundred (1200) would be selected for the study.



The reason for the targeted thousand two hundred is that, out of the two hundred(200) workshops that will be visited, ten(10) technicians averagely in each workshop will be selected and averagely one master technician in each workshop that will be visited.

The sampling techniques used will be simple random and stratified random sampling to select participants for the study. On the selection of technicians, papers on which “yes” were written to the required number with a few “no” would be folded and put in a basket. This would be well shuffled for technicians to pick.

At the end, five apprentice’s technicians would be selected from each workshop and one master apprentice making it a total of six for each workshop. On the whole, six technicians, multiplied by the total number of workshops that would be visited will amount to the total sampling size.

### **3.6 Instrumentation**

- Photographic recordings

Photographs to critical activities at Suame Magazine were taken during the documentation of the existing situation to help me analyze strategic activities, the use of spaces and appreciate the visual impression of the area.

- Measured Drawings

Measured drawings of existing repairs’ centres were documented during various case studies to appreciate the square areas of the working spaces



### 3.7 Validation

The items chosen would be vetted by the supervisor and those found to be irrelevant would be rejected and others modified. The items in each questionnaire would be carefully chosen to establish both face and content validity. After screening and vetting by mates and other people concerned, the supervisor would finally approve the instrument.

### 3.8 Internet sourcing

I will employ the use of internet to get some of the primary data. I will use search engines such as Google.com and others.

### 3.9 Pilot Study

After the validation of the questionnaires was established, copies were printed and administered to six (40) apprentice technician and (5) master technician at Ahinsan Bonsum fitting area. The objective of the pilot study was to find out how the technician would understand the items and respond to them. Items that were poorly responded to were considered ambiguous and therefore reframed.

### 3.10 Administration of Questionnaire

For maximum response rate and effective collection of the questionnaire, it was administered personally. The researcher obtained an introductory letter from the Head of Department: Architecture, to be sent to the fitting area of magazine, a date was set for the administration. On the fixed date, copies of the questionnaire were administered. In order to

obtain appropriate responses from the respondents, the instructions were explained to them. They were allowed sometime to respond to the questionnaire. The researcher collected all the copies of questionnaire distributed from the technician.

### **3.11 Primary and Secondary Sources of Data**

The primary data was solicited from apprentice technician and master technician. This consists of sixty (1000) technician apprentice and (200) master technician. The secondary data was collected mostly from documentary sources (books, publications, periodicals and unpublished thesis). In all the places visited, great efforts were made to collect the necessary data. Data collected from the field and libraries was assembled, synthesized, critically evaluated (analyzed), translated and conclusions drawn from them. The information was described and presented in descriptive form, tables, figures and charts in the thesis.

### **3.12 Data Analysis Plan**

The data collected was coded and entered into the computer. They were analyzed by the researcher who converted the response entered into frequency counts, charts and percentages for analysis.

### **3.13 Limitation**

There was the problem of finding a lot of current books on Suame Magazine at the university library. Some was of the information I got on the internet was difficult to understand since we didn't have such kind of glass in our environment. I talked to practicing architects but couldn't give me much information on the subject matter. Some workers at Suame Magazine were very busy and could not answer my questionnaire; others too wanted me to pay them before they answer the questions.

## **CHAPTER FOUR**

### **FINDINGS AND DISCUSSIONS**

#### **4.0 DOCUMENTATION OF SUAME MAGAZINE**

##### **4.1 SOCIO - CULTURE**

Suame is a major suburb in Kumasi. Suame Magazine (SM) is a huge urban sprawl at the centre of Kumasi. As far as most folks can remember, Suame Magazine has been an incredible labyrinth of garages, workshops, tools shacks, machines, mini-marts, outdoor laboratories, greasy foundry and assorted furnaces-on-wheels. It is a place awash with urban myth and steeped in a changeless flux of activities. About 20,000 artisans, sales persons, artisans and garage operators-the four main classes of inhabitant - supply the ceaseless buzz, and sustain sm's formidable reputation as the shop that never lacks. regardless your mechanical woe, particularly if it is auto-related, rest assured that a cure is lurking somewhere in the nooks and crannies of suame magazine.

##### **Justification**

Kumasi Suame Magazine since its existence ,have played a major role in the transportation industry for the country as a whole.it serve as a solution center for about 90% of the vehicles on

our roads as a result of this, we deem it worth studying to uplift the image of suame magazine to enable it play its role in the modern environment.

### **Area of study**

- Historical development
- population dynamics
- religious activities
- educational levels
- leisure and entertainment
- 

### **Historical development**

#### **Origin of suame magazine**

The term 'magazine' is a historical reference to military armories (or magazines) that were located in the area during colonial times. suame magazine originally emerged in the 1930s and experienced significant population growth in the 1950s and 1960s as a result of the removal of businesses from the city centre of Kumasi. Growth of the magazine was spurned again in the mid-1970s when restrictions were imposed on importation of new vehicles and parts. While some large enterprises suffered, the small enterprises of suame magazine filled the gap that the policy created by crafting spare parts that were originally imported.

## **The transition**

In 1983, under the guidance of the world bank and international monetary fund, the government of Ghana launched the economic recovery programme as an effort to reduce Ghana's debt and improve trading practices. As part of this initiative, the restriction on importation of vehicles and parts were removed. Some large enterprises were able to re-establish themselves but now competed against the small enterprises in Suame magazine which had developed expertise.

## **Suame magazine today**

Today, Suame magazine has a working population of over 200,000 and approximately 12,000 shop-owning. Suame magazine is an artisanal engineering cluster spanning 20 square miles located in Kumasi, Ghana.



Figure 1 (Pictorial view of Suame magazine)



## Population dynamics

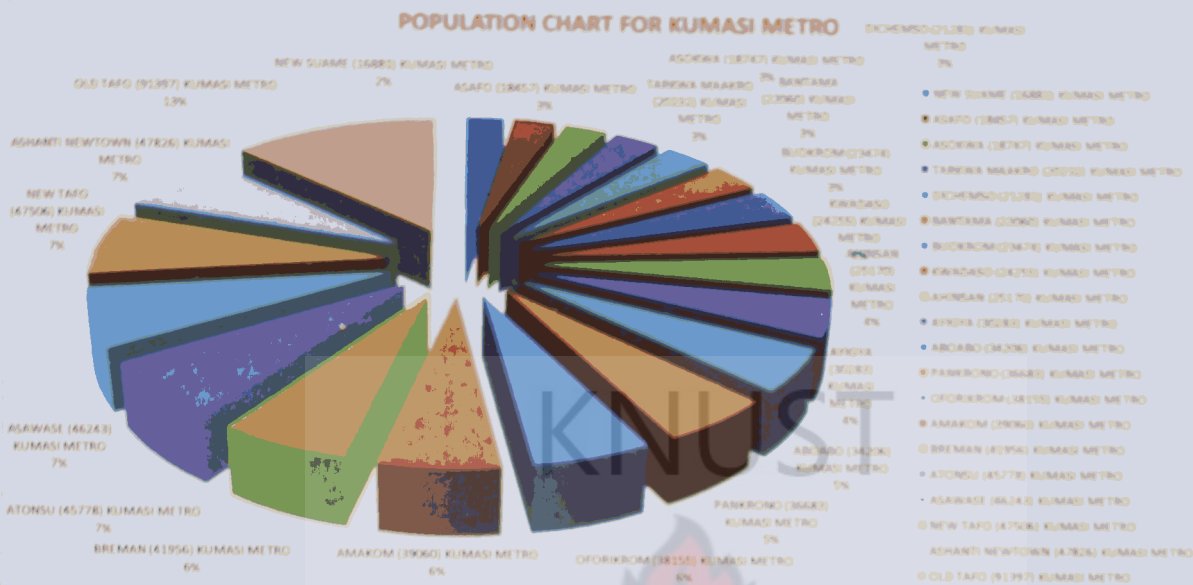


Figure 2 (Chart showing the population of Kumasi metro)

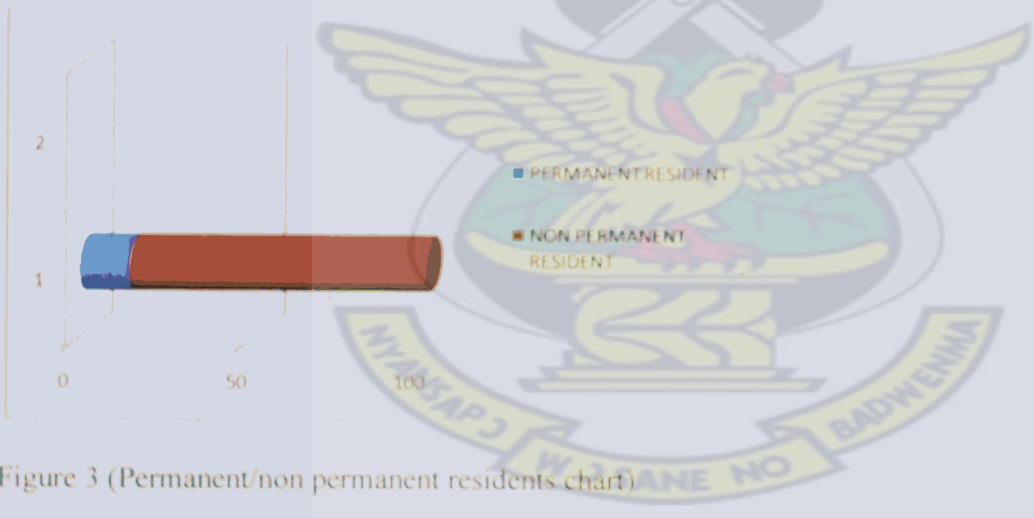


Figure 3 (Permanent/non permanent residents chart)

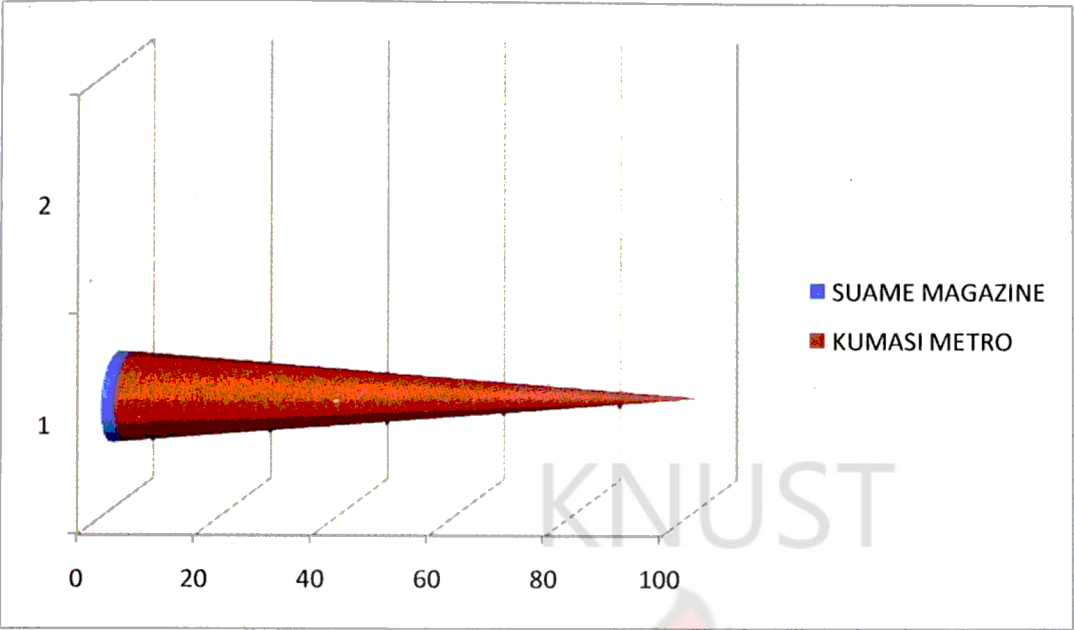


Figure 4 (Chart showing population of Kumasi metro to population of Suame magazine)

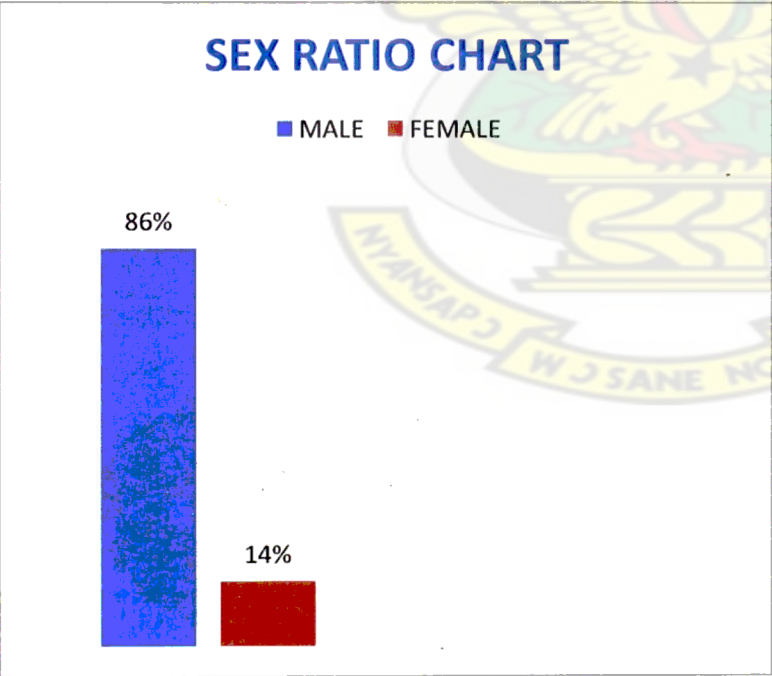


Figure 5 (Chart depicts male to female at Suame magazine)

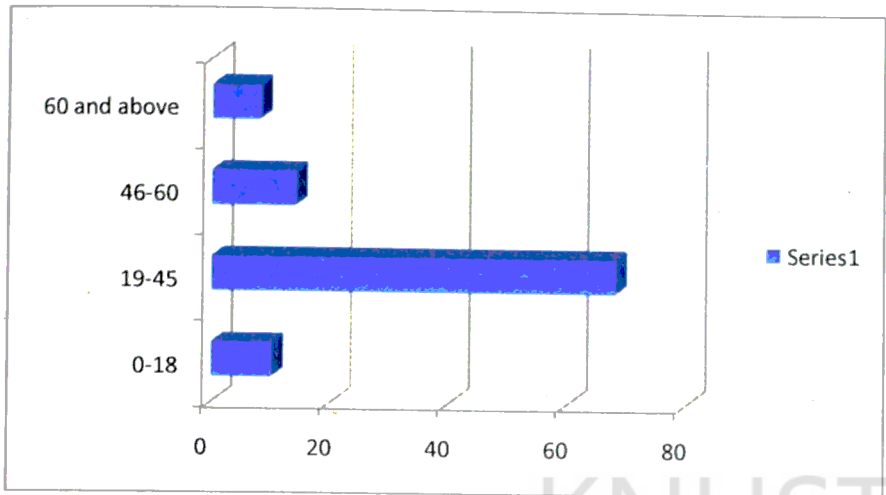


Figure 6 (Bar chart showing age distribution of the population at Suame Magazine)

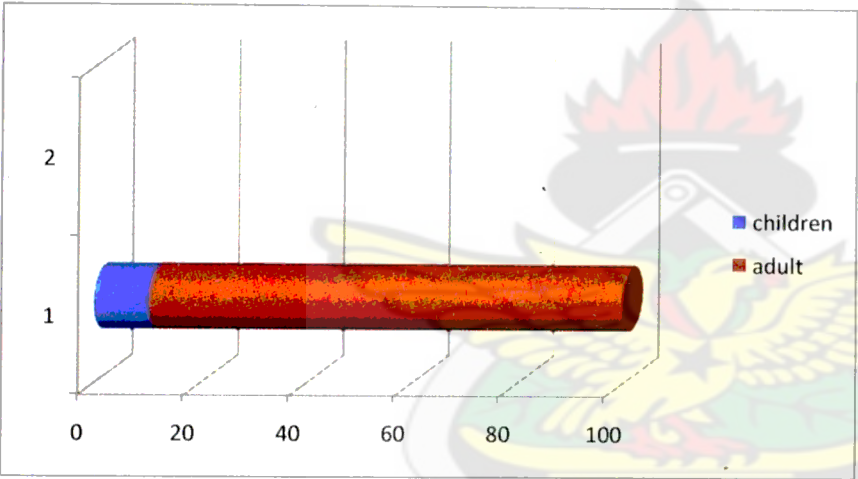


Figure 7 (Chart showing children to adult of Suame magazine's population)

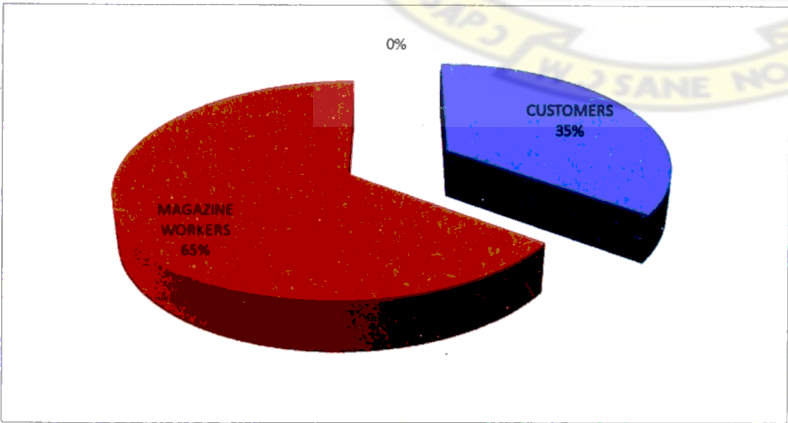


Figure 8 (Pie chart showing customers who visit magazine to workers at the magazine)

## **Educational levels**

It is estimated today that between 70%-75% of the labour force are employed in the informal sector in Ghana. Suame magazine's educational level is not different.

## **Categories of labour force**

### **formal sector**

bankers

health workers

administrators

engineers

### **informal sector**

shop owners&attendants

whole sellers

petty traders

spare parts dealers

mechanics

fabricators

hawkers

food sellers

artisans





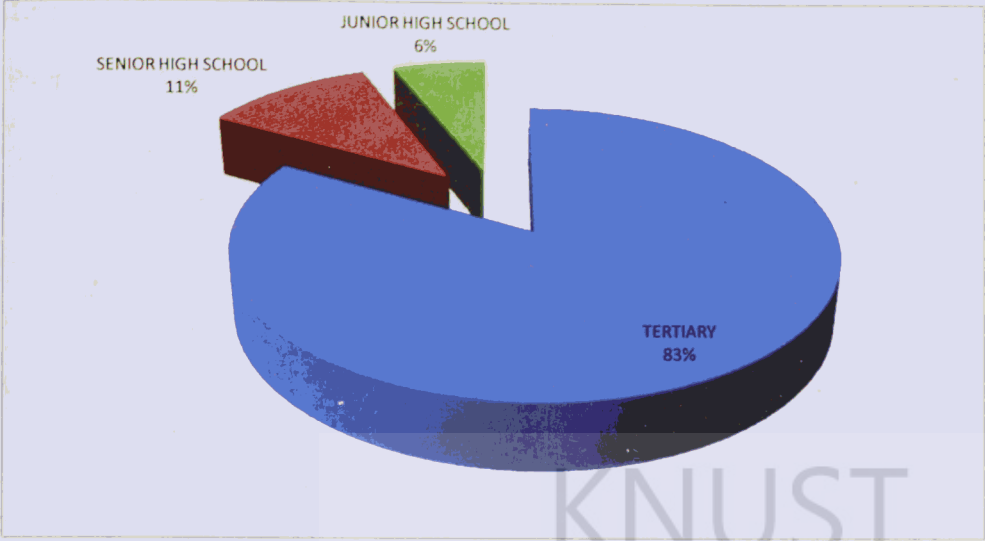


Figure 9 (Pie chart showing educational levels in the formal sector)

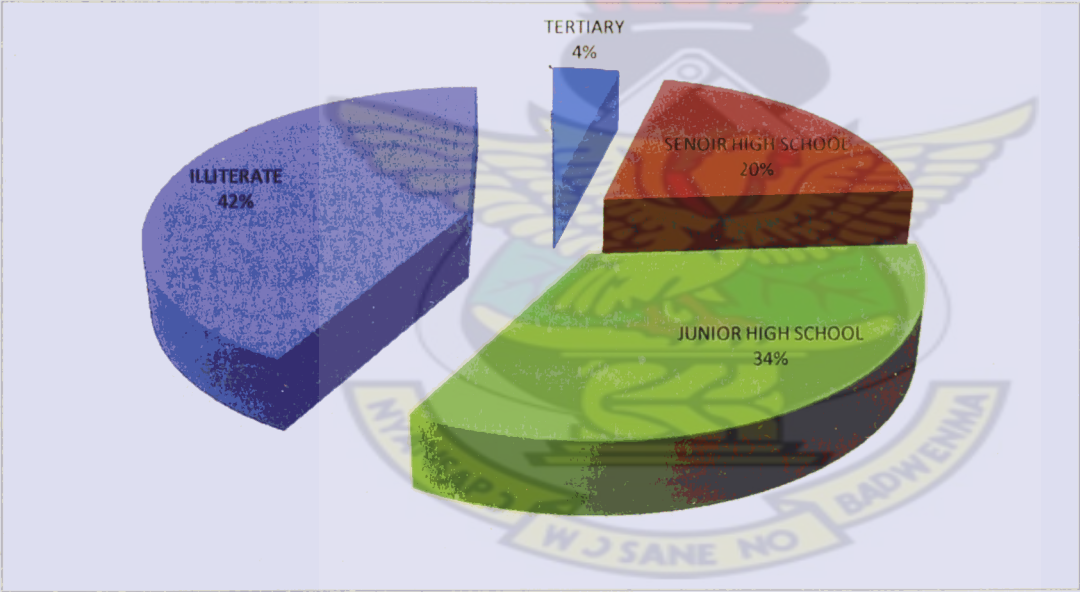


Figure 10 (Pie chart showing educational levels in the informal sector)

The national vocational training institute is a vocational center operated by the government of Ghana with the sole aim of equipping the youth with technical knowledge. Some of the courses offered are

- 1. Auto mechanics
- 2. Auto electrician
- 3. Basic printing
- 4. Auto body works

The Suame magazine industrial development organization (SMIDO) has the vision of moving the magazine from the ancient way to the modern way of repairs. This vision led them to the establishment of a training school called Suame magazine automatics training center. It was recently opened by the vice president of Ghana, HE John Mahama.

**Religion**

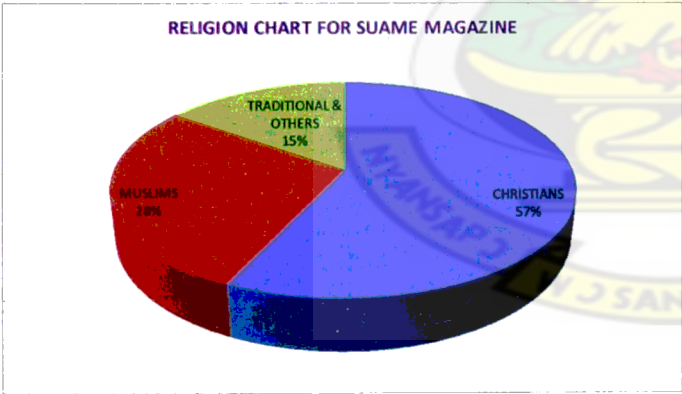


Figure 11 (Chart showing religion distribution)

Social control and administration

The Kumasi metropolitan assembly is the central core of administration with supporting government departments. Subin sub-metro which is one of the sub-metros controls the Suame magazine. There are also several committees for specific functions under the Subin sub-metro.

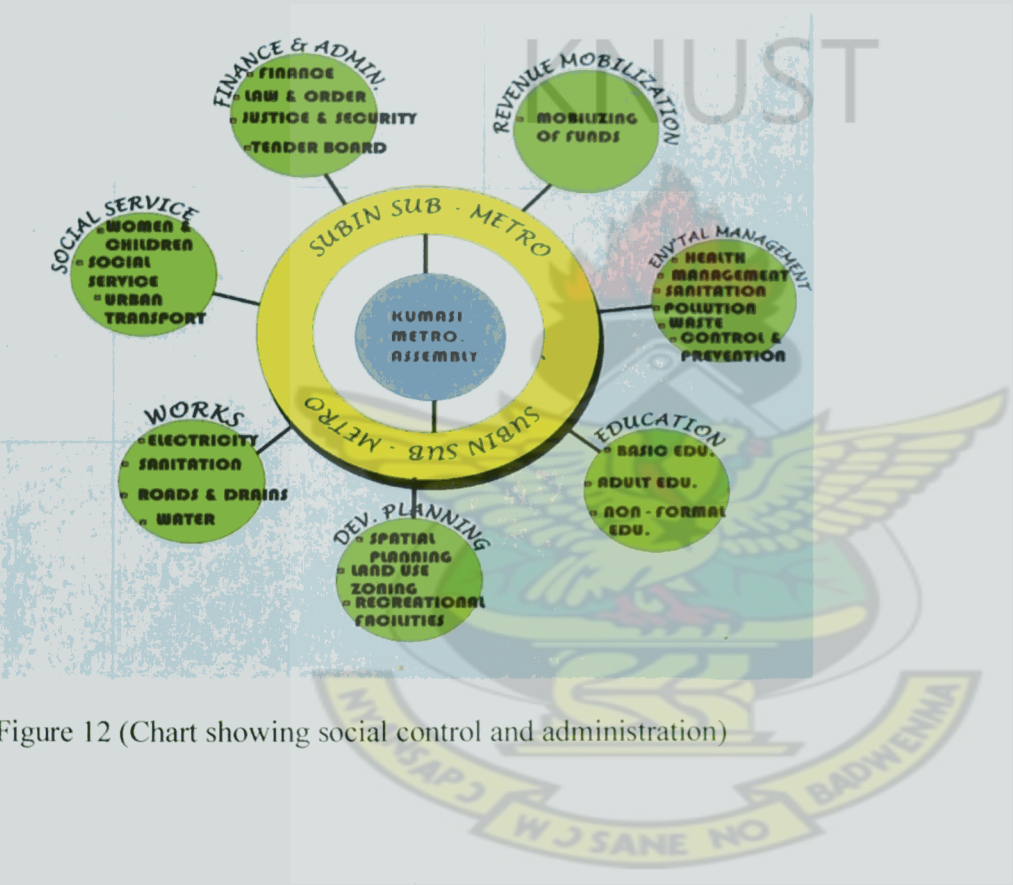


Figure 12 (Chart showing social control and administration)

4.2 ECONOMIC ACTIVITIES

Introduction

The major control to the growth of a nation is its economy. Kumasi Suame magazine being the biggest of its kind in the country and West Africa as a whole facilitate this activity. The Ashanti regional capital which houses the Suame magazine lies in the middle of the country and support and link both the southern and northern sectors of the country. The main activities that go on at Suame magazine are categorizes under the following

- Retail/wholesale
- Fabrication
- Auto mechanics
- Services



Figure 13 (Photograph showing retail/wholesale)



Figure 14 (Photograph showing fabrication)



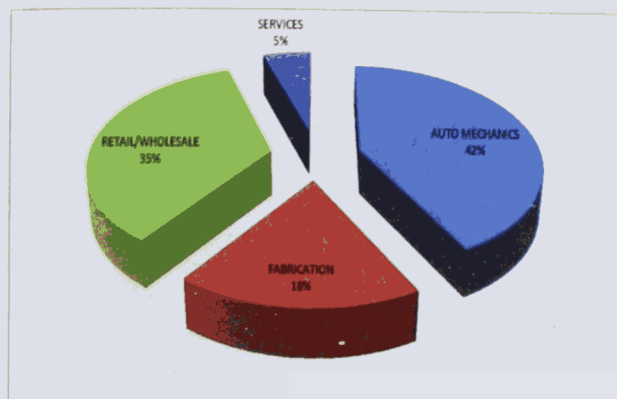


Figure 15 (Pie chart showing Percentages of economic activities)

**Retail/Wholesale activities includes:**

- 1.Car spare parts. eg doors,finders,absorbers etc
- 2.Car decoration.eg 4x4 front guard,sit covers etc
- 3.Car accessories .eg engine oil,brake oil,grase,electrical parts etc.

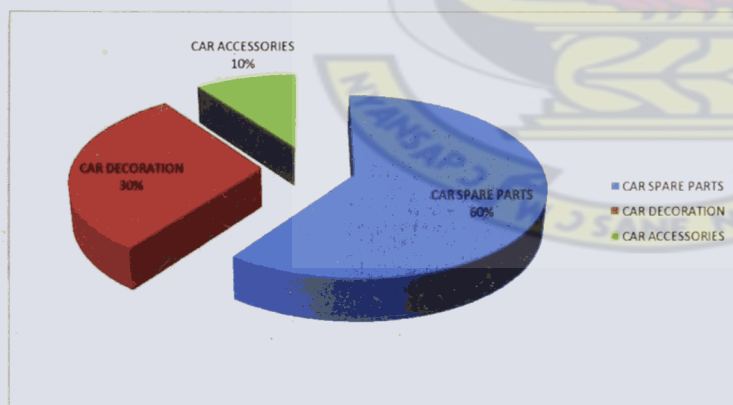


Figure 16 (Pie chart showing Retail/Wholesale activities)

**Retail/Wholesale activities includes:**

- 1.Car electrical parts. eg car lights,control boards,ignition etc

- 2.Car aircondition.eg detecting faults,aircon gas filling etc
- 3Car engine/under parts .eg repairing of engine

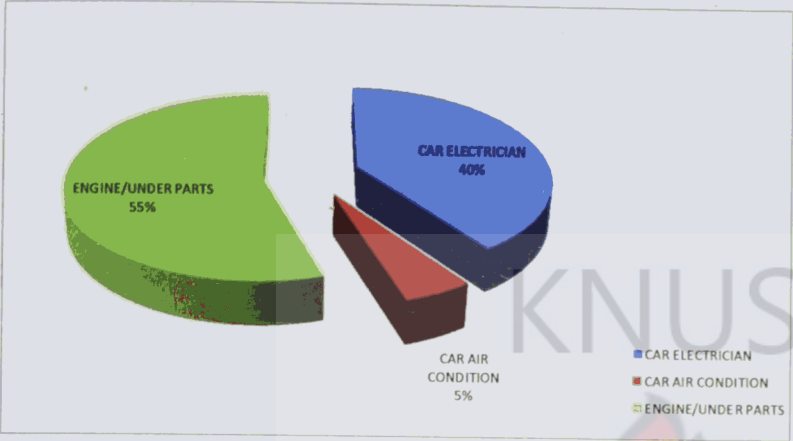


Figure 17 (Pie chart showing Auto mechanics activities)

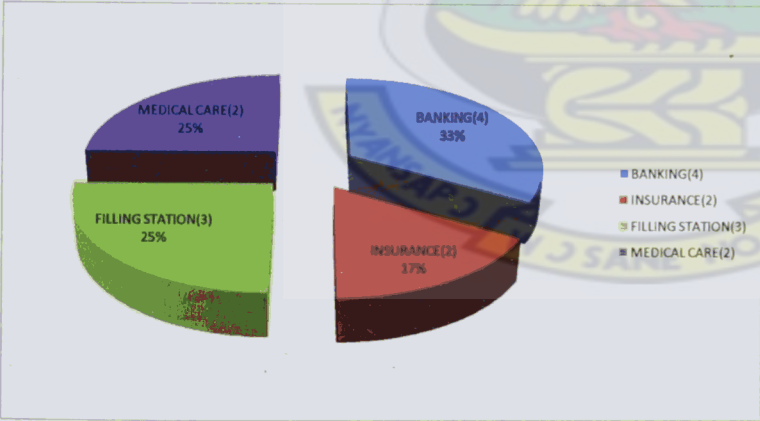


Figure 18 (Pie chart showing services activities)

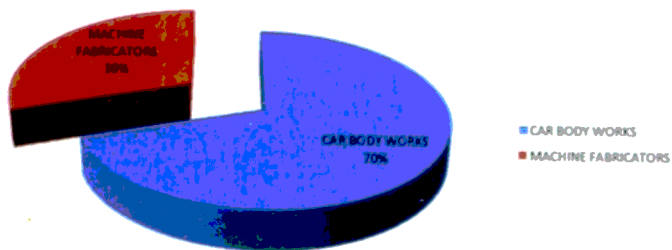


Figure 19 (Pie chart showing fabrication activities)

### Sources of goods

Goods sold at Suame magazine can be grouped under two.

- 1.Imported goods
- 2.Locally manufactured goods

Goods brought to Suame magazine from outside the country amount to 95% of total goods.They normally come from Korea, United Kingdom,China,Dubai,France,Germany, Spain.Goods imported includes

- 1.Car parts
- 2.Engines
- 3.Brand new cars
- 4.Used cars
- 5.Car tyres

Locally manufactured goods amount to 5%of the total goods. They include

- 1.Bolt and nuts
- 2.Engine oil
- 3.Brake bands
- 4.Rubers

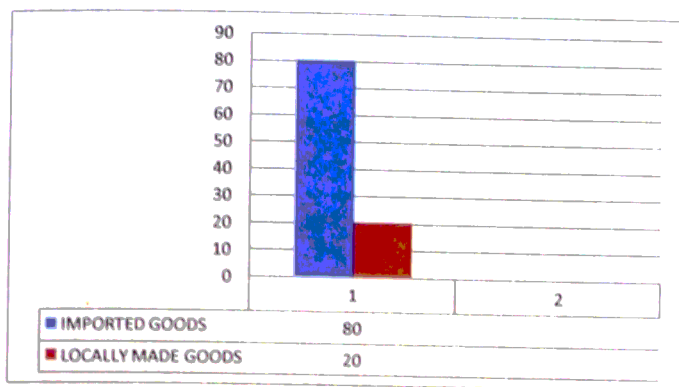


Figure 20 (Chart showing percentage of imported goods to locally manufactured goods)

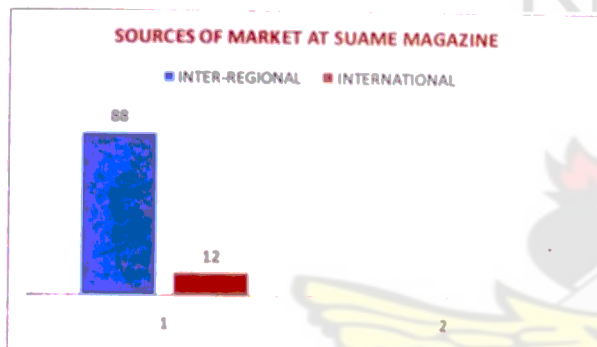


Figure 21 (Chart showing sources of market)

### Storage of goods

Large quantities of goods are brought to the Suame magazine and therefore the need for storage spaces. Under the study area, it was found out that, two types of storage exist.

1. Storage within shops
2. Storage in front of shops along the street.





Figure 22 (picture showing storage in front of shops along the street)

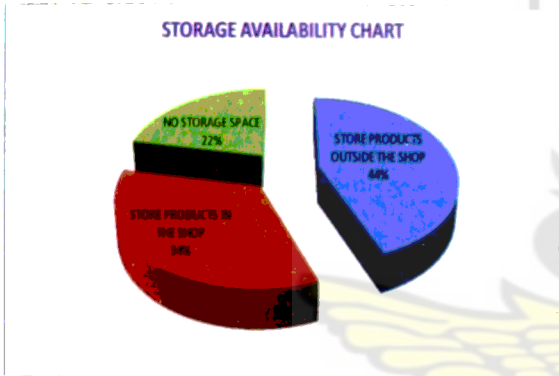


Figure 23 (chart showing availability of storage space)

Some of the shop owners own storage spaces in their Homes.They transport them into the shops when the need arises by the use of pick ups,trucks.

With some of the spare parts dealers, they order for wares when customers need them.

Security

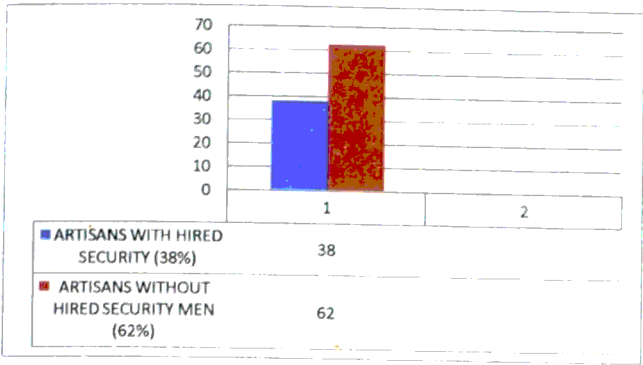


Figure 24 (Chart showing the number of shops with hired security to those without security)

Expenditure

There are several expenses that are incurred in the daily running of businesses. The businesses in the study area make expenses on the following.

- 1.Transportation 2.Taxes 3.Communication 4.Food
- 5.Insurance 6.Waste 7.Utilities 8.Rent

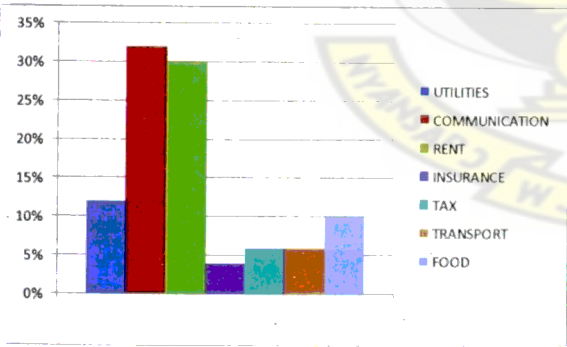


Figure 25 (Chart above shows the forms of expenditure of the people of Suame magazine)

## Insurance

A number of insurance companies' representatives exist at the Suame magazine to provide a diverse insurance policies.this include

1. Life policy insurance
2. Motor insurance
3. Burglary
4. Child education
5. Retirement policies
6. Funeral policy
7. General business
8. National health insurance

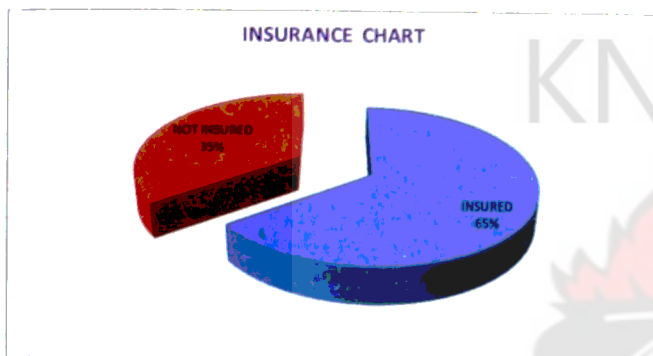


Figure 26 (Chart showing the percentage of people covered with health insurance scheme is the biggest to those uncovered by any form of insurance)

The national health insurance scheme is a scheme introduced by the government of Ghana to provide free health care to people.

## Advertisement

The various shops and workstations at the Suame magazine employs various means to sell their products and render services to customers by the means of the following

1. Media: radio stations, news papers, television stations  
the internet etc
2. Bill boards and sign boards
3. Banners

### Types of billboards and sign boards

1. Signage mounted directly on buildings
2. Sign boards mounted from metal supports

3. Adverts painted on walls of buildings
4. Banners tied to supports
5. Sign boards mounted on poles



Figure 27 (Picture showing signboards mounted on poles)

#### *Adverts on walls*



Figure 28 (Picture showing Adverts mounted in front of shops)



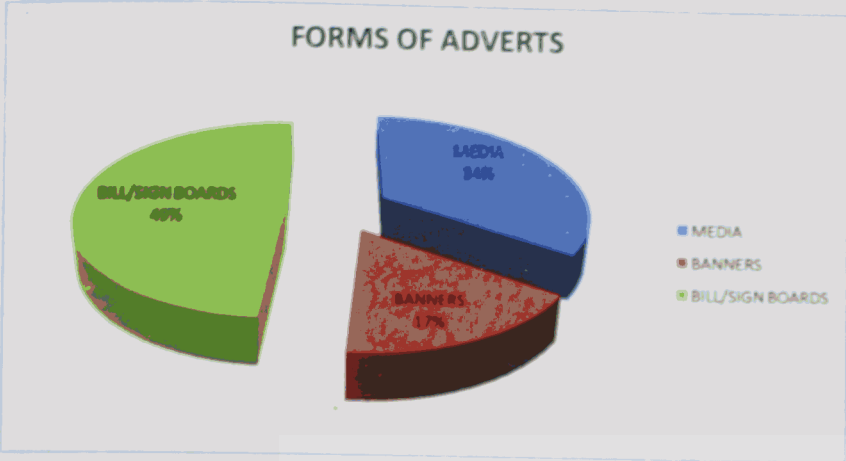


Figure 29 (The chart above shows the percentages of various forms of adverts at the Suame magazine)

### Daily and monthly sales

Business in the Suame magazine records various sale during the hours of work.

Sales made can be categorized into

1. Low range between 0-GH50
2. Medium range between GH50-GH1000
3. High range from GH1000 and above.

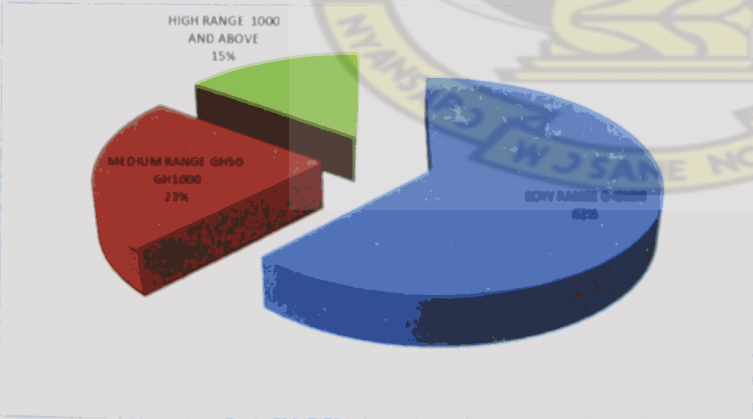


Figure 30-(The chart above shows the monthly sales of three categories of sellers)

**Savings pattern**

There are various means by which people at Suame magazine save. The following are the main ways.

1. The bank    2. Susu    3.Susu and bank    4.No savings

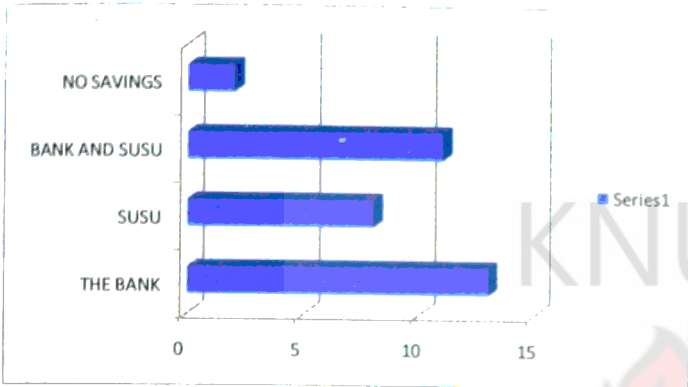


Figure 31(Chart above shows the savings pattern at Suame magazine)

**Peak seasons**

The peak seasons can be grouped under four main groups. Namely

- 1.1st quarter            2. 2nd quarter.            3. 3rd quarter            4. 4th quarter



Figure 32- (Chart showing peak seasons)

4.3 INFRASTRUCTURE

We will consider the following element under infrastructure:

- 1. Transportation
- 2. Security and Fire services
- 3. Water supply
- 4. Electricity supply
- 5. Waste management

TRANSPORTATION

Types of roads

<b>1.PRIMARY ROADS:</b> <ul style="list-style-type: none"><li>-Most frequently used</li><li>-Major spines</li><li>-Number of vehicles per hour -778</li><li>-Road length about 730m to 1000m</li><li>-Road width ranges between 9.4m to 17m.</li><li>-3 to 4 lanes</li></ul>	<b>2.PRIMARY ROADS:</b> <ul style="list-style-type: none"><li>-More used</li><li>-Minor roads</li><li>-Number of vehicles per hour -563</li><li>-Road width between 6m to 9.5m</li><li>-2 lanes</li></ul>	<b>3.TERTIARY ROADS:</b> <ul style="list-style-type: none"><li>-less used</li><li>-Distributor roads</li><li>-Number of vehicles per hour -269</li><li>-Road width between 3m to 9m</li></ul>
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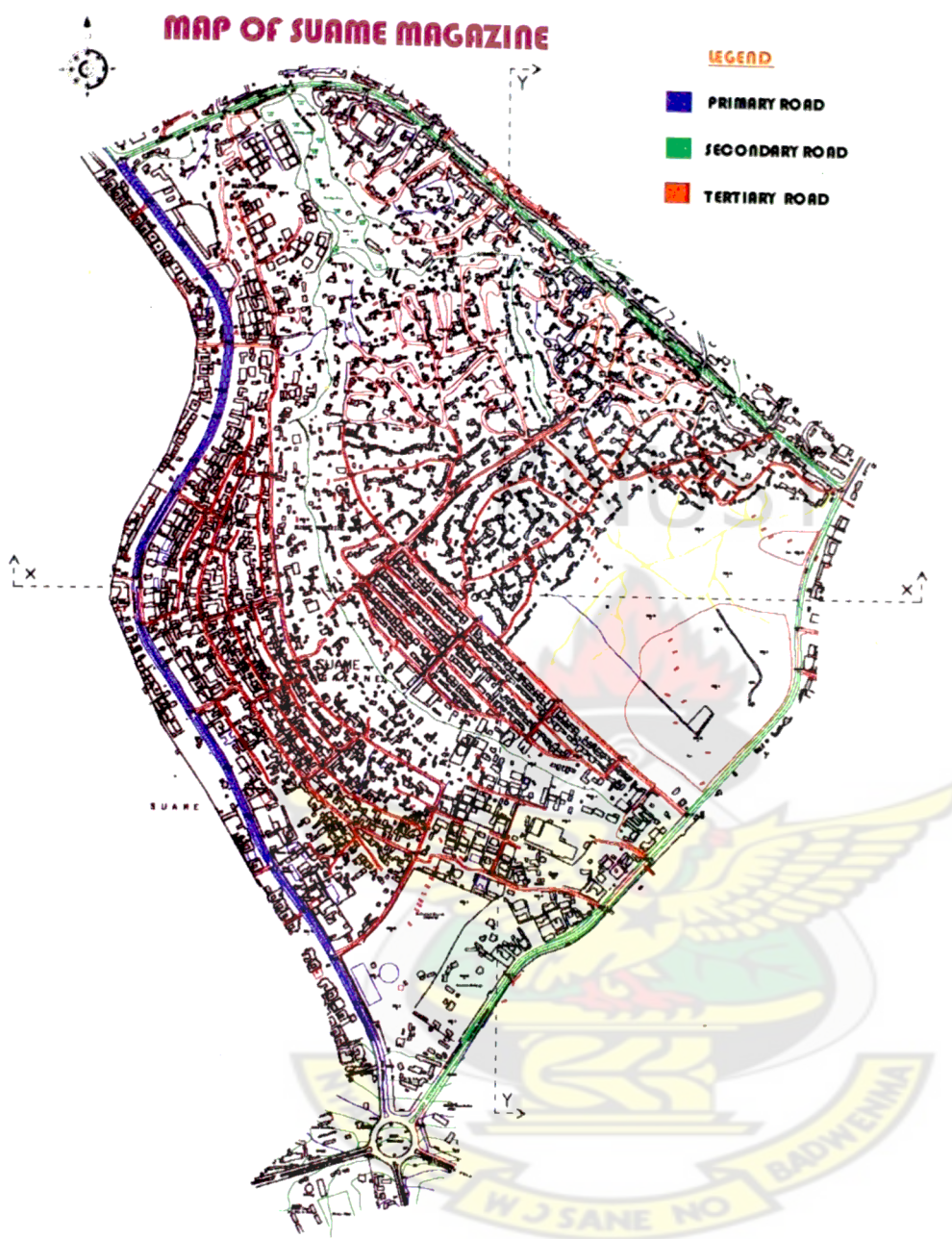


Figure 33-(Map showing existing road network at Suame Magazine)





Figure 34-(Pictures showing site boundaries)

86% of the artisans at Suame Magazine stay outside the working environment and 70% of them come to work with public transport. 22% with their private cars and 8% by foot.

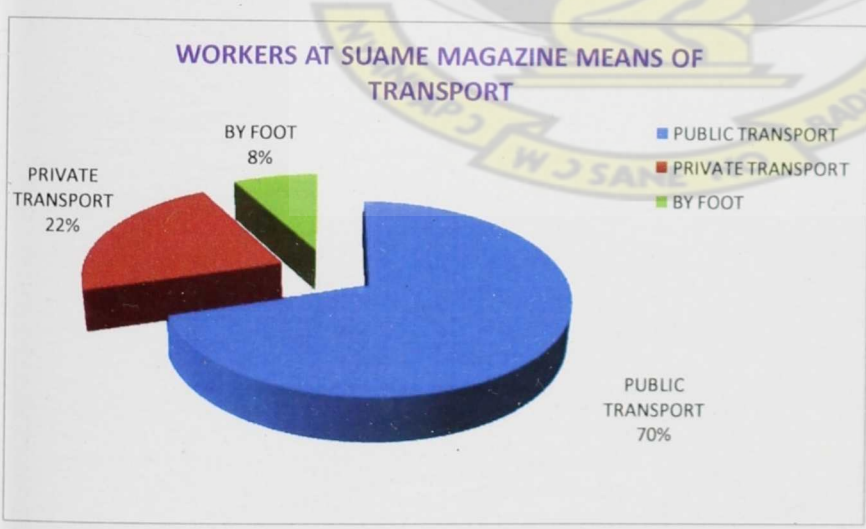
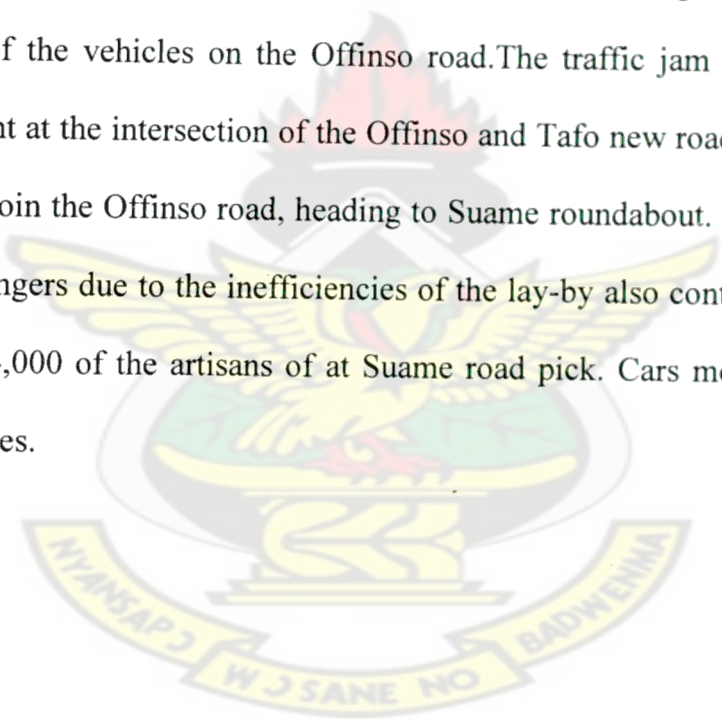


Figure 35-(Chart showing means of transportation at Suame Magazine)

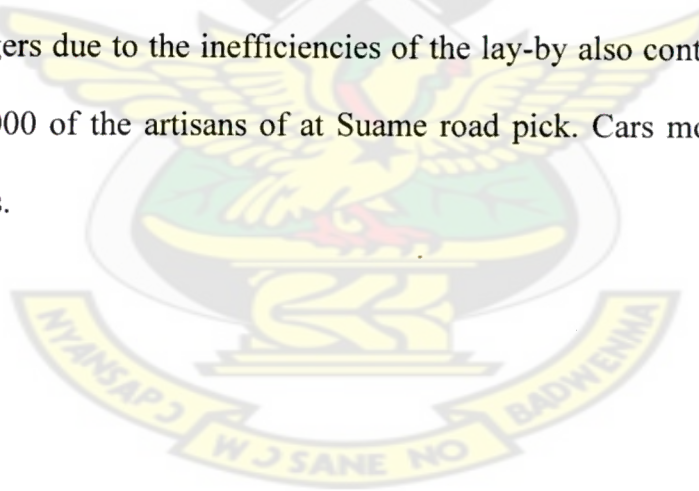
There are no car parks on the Offinso road; the lay-bys have therefore been turned into parking spaces for retailers and their customers. Drivers stop on the road to drop off passengers and load which result in a lot of traffic congestion on the road. There are no thoroughfares linking Tafo road to Offinso road so customers looking for any products/services have to be in traffic jam for long hours before finding what they're looking for. This makes customers very uncomfortable to transact business effectively at the Suame Magazine.

Trucks load up spare parts from the harbours and transport them Suame magazine where they are off-loaded into shops and in front of shops where they are stored. Traffic is at its pick between the hours of 7am-9pm in the morning and from 5pm-7pm in the evening. Mini vans "trotro" and taxis constitute 72% of the vehicles on the Offinso road. The traffic jam is as a result of the absence of a traffic light at the intersection of the Offinso and Tafo new road. Also drivers using unauthorized roads to join the Offinso road, heading to Suame roundabout. Drivers who stop on the roads to pick passengers due to the inefficiencies of the lay-by also contributes to the traffic jams. Approximately 14,000 of the artisans of at Suame road pick. Cars mostly on the Offinso road to the various homes.



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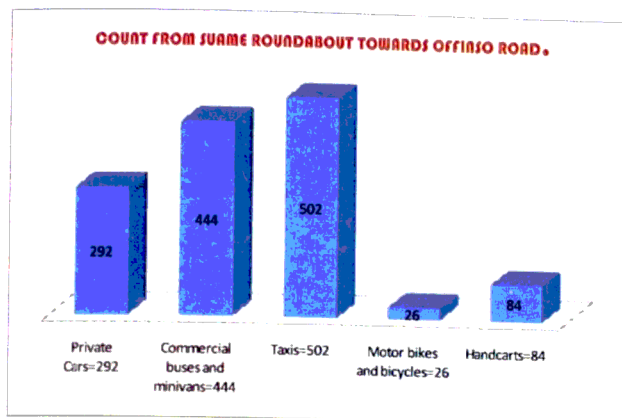


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12TH FEBRUARY, 2009. (7:45am - 8:45am)



12TH FEBRUARY, 2009. (5:00am - 6:00pm)

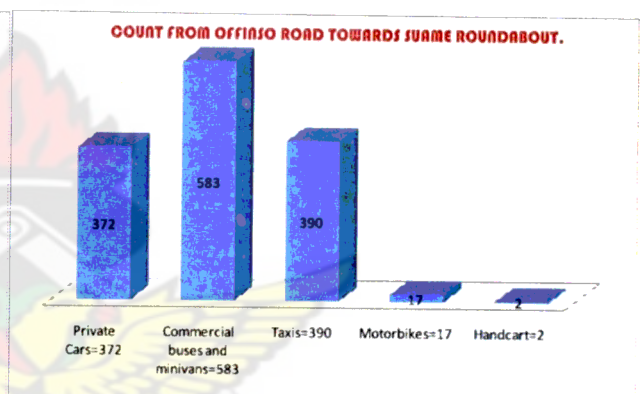
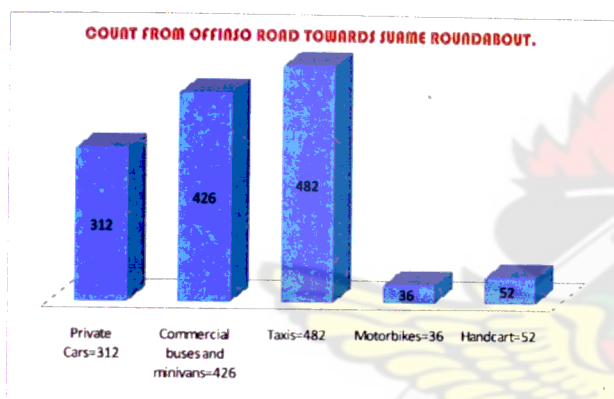
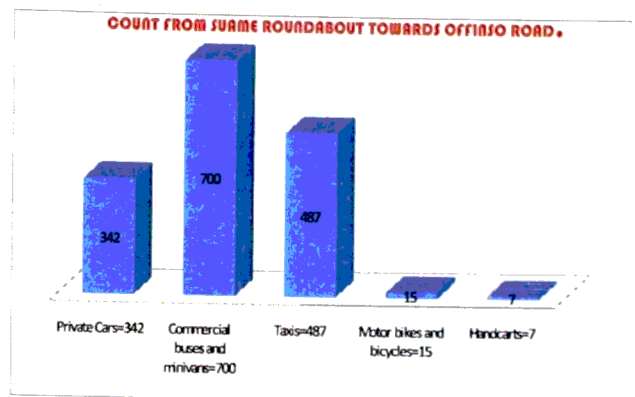


Figure 36-(Chart showing traffic flow)

## Conflict zones

The loads on Offinso and new Tafo road create a serious conflict at their intersection. There is no traffic light and no roundabout. Drivers have to struggle their own way to pass through. Occasionally, there are traffic controllers who help calm the situation.

The Tafo road which is a secondary road is not able to handle the current load of vehicles on it because it was not designed for such high loads.



Figure 37-(Chart showing conflict zones)

### Security and Fire services

62% of the hired security men at Suame magazine are untrained. This has made the combat of crime cases very difficult. There is no coordination between them and the police service in the area.

70% of the streets are not well illuminated and this creates the conducive environment for criminals to perpetuate their activities.

There is a police station at Suame but their presence in helping to combating crime is not felt by the artisans.

Poor road network and planning of the structures in Suame has made it difficult to apprehend criminals if they're seen since its easy for them to hide anywhere.

36% of the retailers use burglar proof doors with at least two padlocks as a means of securing their products.

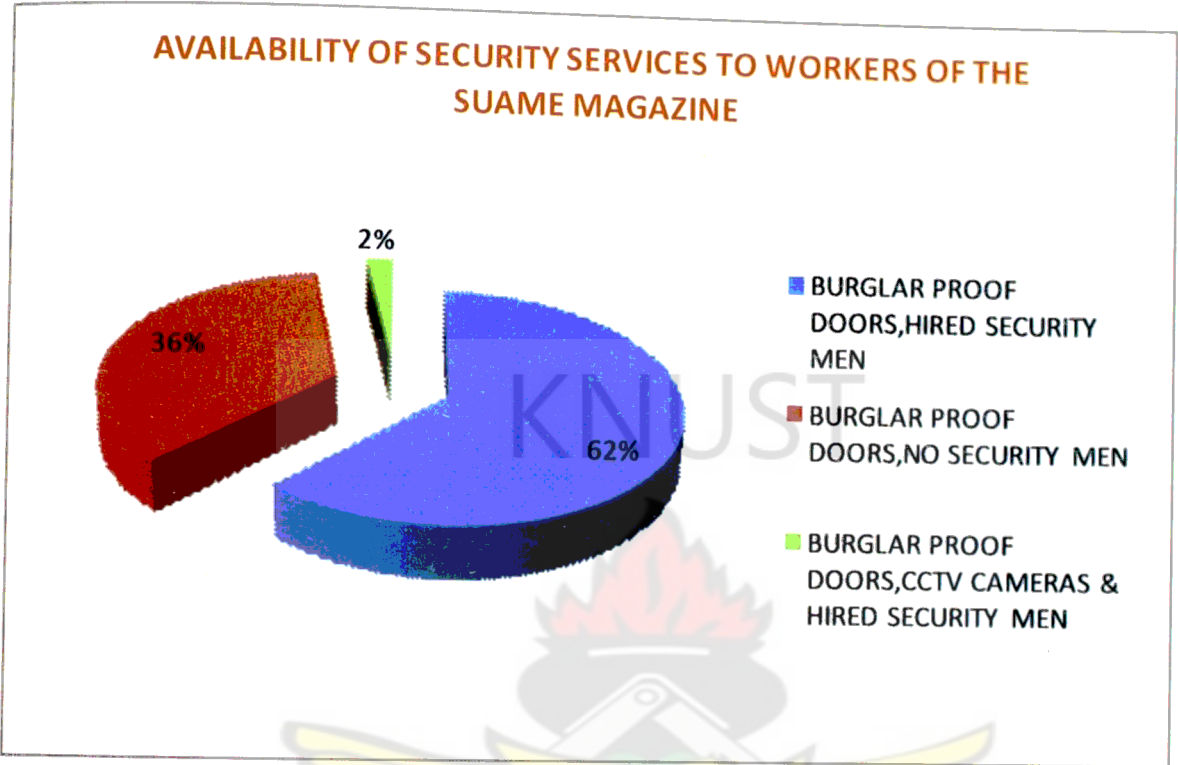


Figure 38-(Chart showing availability of security services to workers of Suame Magazine)

**Waste Management**

The activities of Suame Magazine

Produces the following

- 1. Metal scrap (40%)
- 2. Degradable & Non-degradable (46%)
- 3. Dirty oil (14%)

There are no waste bins placed at vantage point for people to drop their waste materials as one walks through Suame Magazine.

People just throw their solid waste anywhere on the ground and in the gutters.

Liquid waste (urine, water, dirty oil.etc.) are poured in gutters to drain away.

Zoom lion workers sweep the main roads early in the morning but they're not able to cover the whole area before the business day starts.

When it rains, it drains into river Bunkonfuom running through the valleys of Suame Magazine.

**BELOW IS A PIE CHART SHOWING  
HOW THESE WASTE ARE MANAGED**

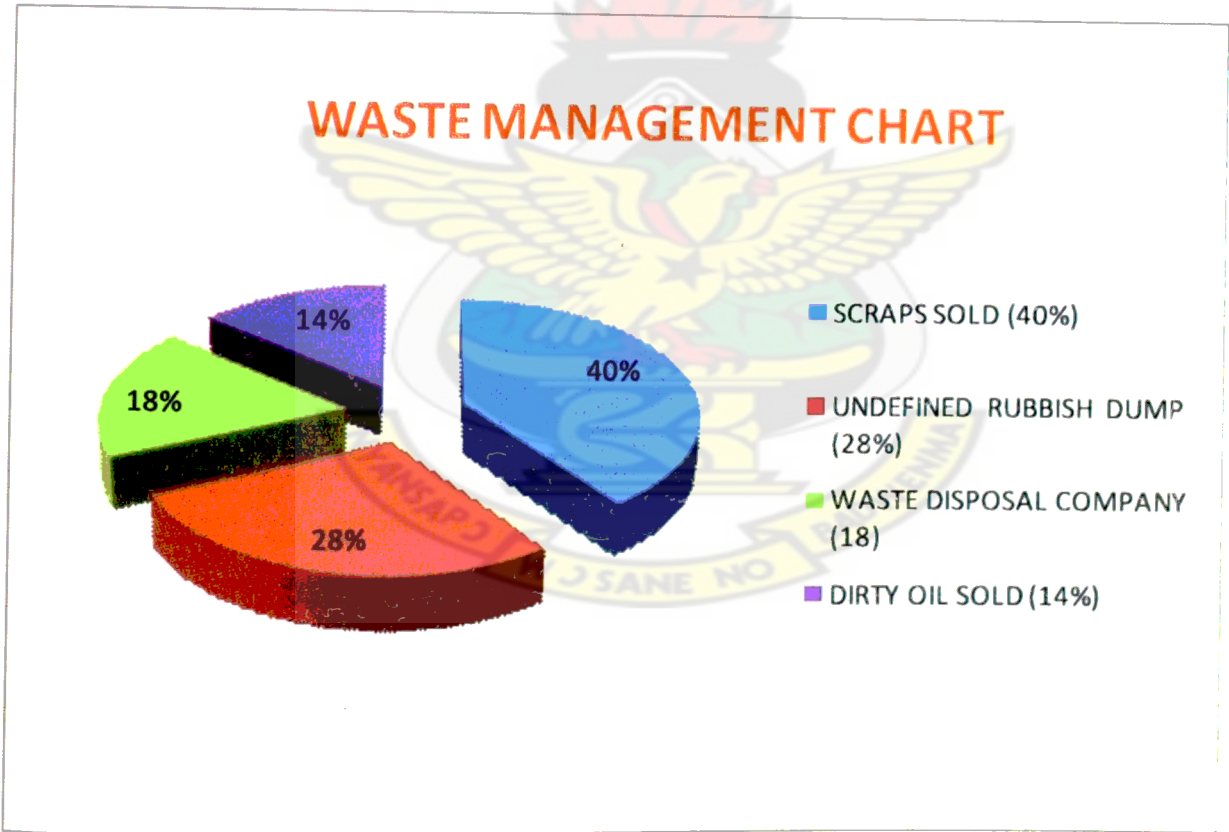


Figure 39-(Waste management chart)





Figure 40-(Pictures showing some of the waste materials)

Electricity Supply

18% of the workers at Suame Magazine use electricity to directly facilitate their day to day activities whilst the remaining 82% do their businesses without electricity.

There are six (6) 500kva transformers located at Suame Magazine which is use to distribute electricity power to the artisans.

There is a primary sub-station e located at the Suame Magazine.

The capacities of the five transformers does not meet the need of the growing number of artisans the magazine.



A PICTURE OF PRIMARY SUB-STATION E LOCATED AT THE SUAME MAGAZINE. IT'S THE ONLY STATION DISTRIBUTING POWER TO THE FIVE TRANSFORMERS AT THE MAGAZINE.

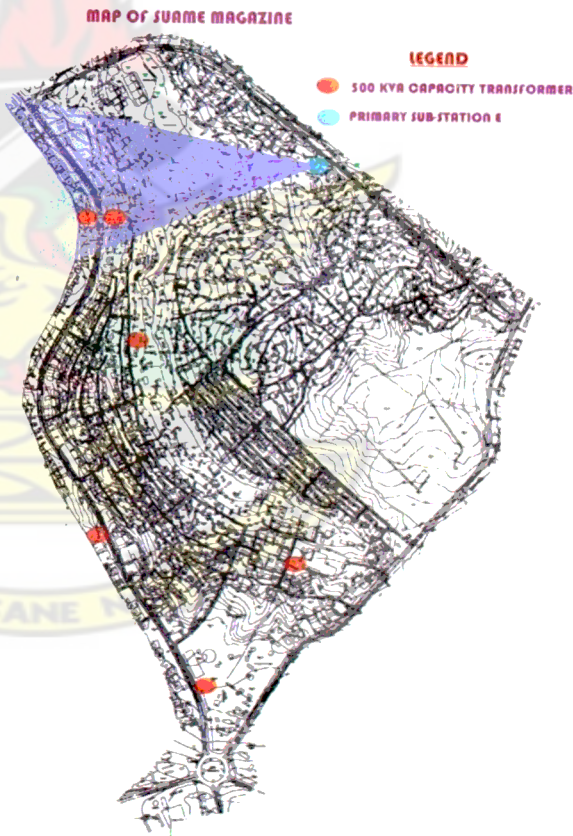


Figure 41-(Pictures showing the location and primary sub-station)



Water Supply

Water for day to day activities at the workshop is fetched from taps being supplied by Ghana Water Company Limited (GWCL) and other fetch from river Bunkonfuom.

GWCL supplies water to 13,000 consumers at the Suame district.

There are fire hydrants located at the Suame Magazine but cannot be identified on the maps. Workshops have been constructed over some of them and are impossible to locate some of them. Food vendors cooking at the Suame magazine buy clean water outside the magazine and use it to cook their food.

Other artisans have dug wells where people fetch and bath with it at the end of the day’s work before they go home.

95% of the workers at Suame don’t use water directly in their line of work.

95% of retailers and workshops at Suame magazine don’t have any fire extinguishers.

MAP SHOWING WATER DISTRIBUTION LINES IN KUMASI

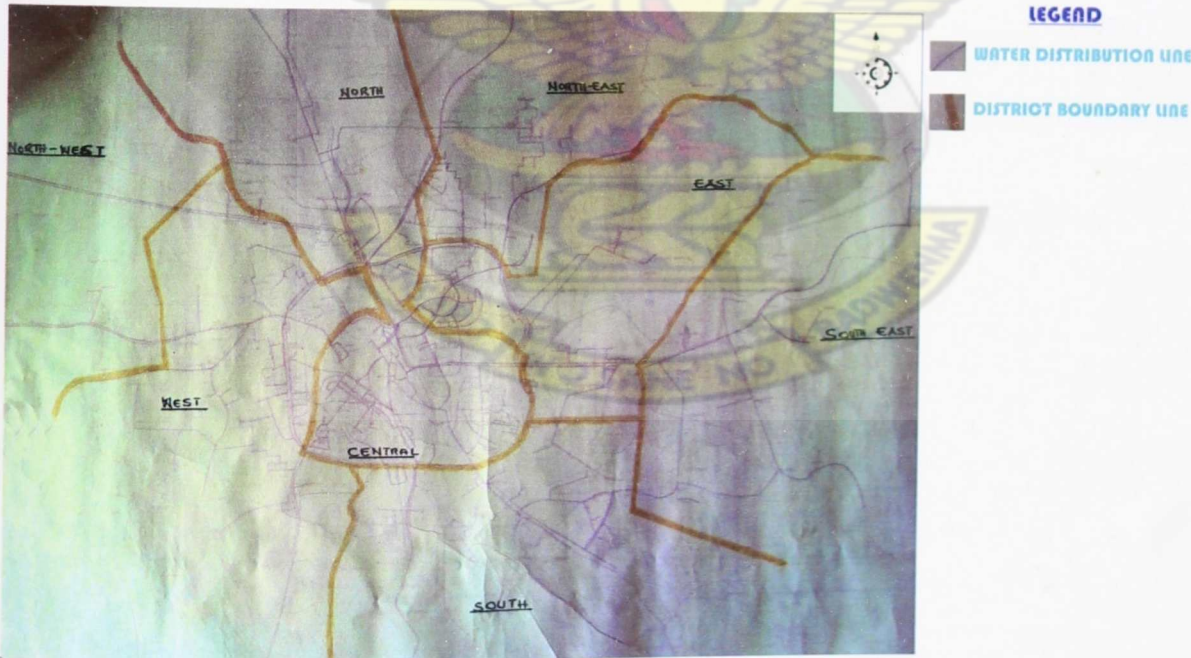


Figure 42-(Map showing water distribution lines in Kumasi)

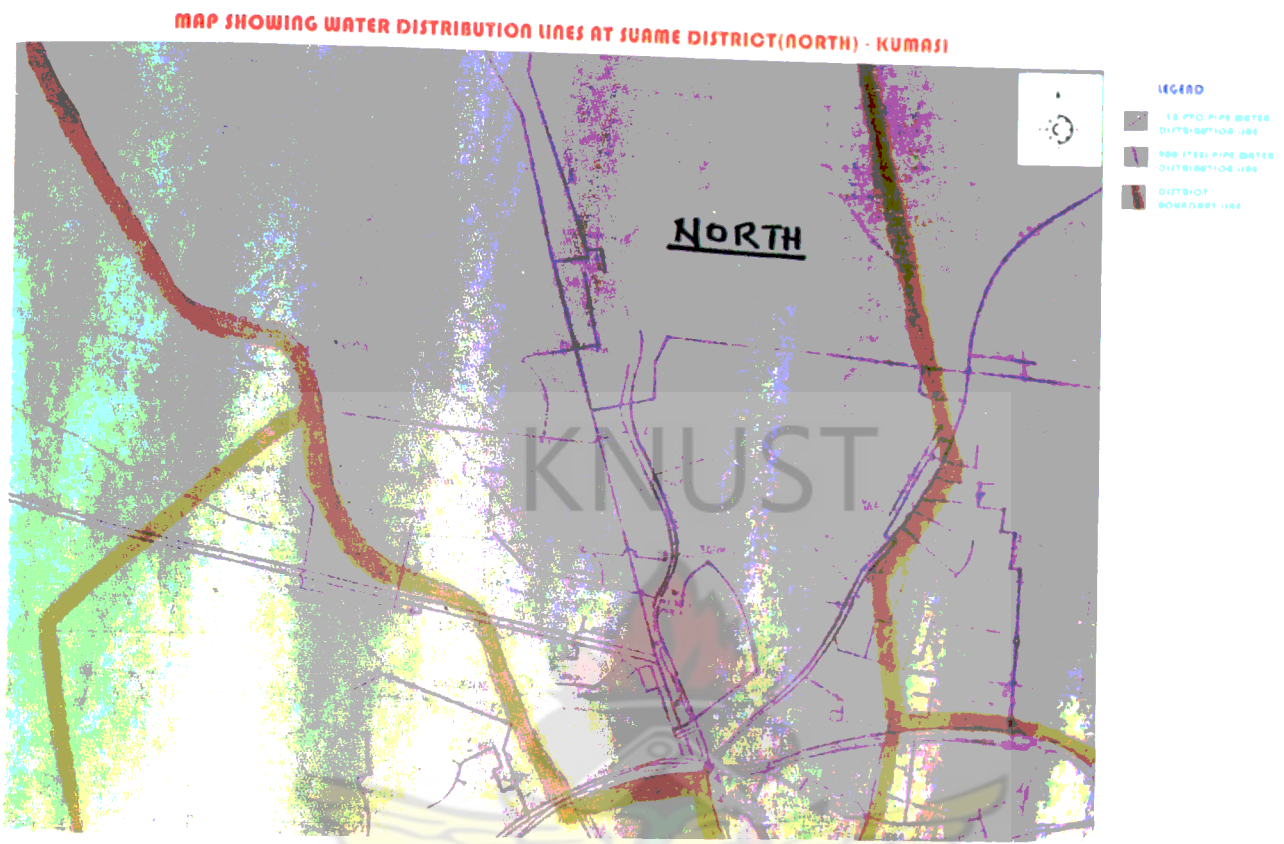


Figure 43-(Map showing water distribution lines at Suame Magazine)



#### 4.4 PHYSICAL ENVIRONMENT

##### SITE BOUNDARIES

The Suame Magazine site is bounded by the following:

1. THE OFFINSO ROAD
2. THE TAFO ROAD
3. THE NEW TAFO ROAD

The Suame Magazine site covers an area of 2,371,899 m<sup>2</sup> (585.85 acres).

The site slopes from the east towards the west at a drop of 2m at a distance of 10m and vice versa from west to east to form a valley at the middle of the site.

The Bunkonfuom River runs through the valleys on the site with marshy areas around it.

##### Building conditions

Structures are classified based on their performance using the following criteria;

1. Super structure
2. Infrastructure & services

They are grouped into; good, fair or poor.

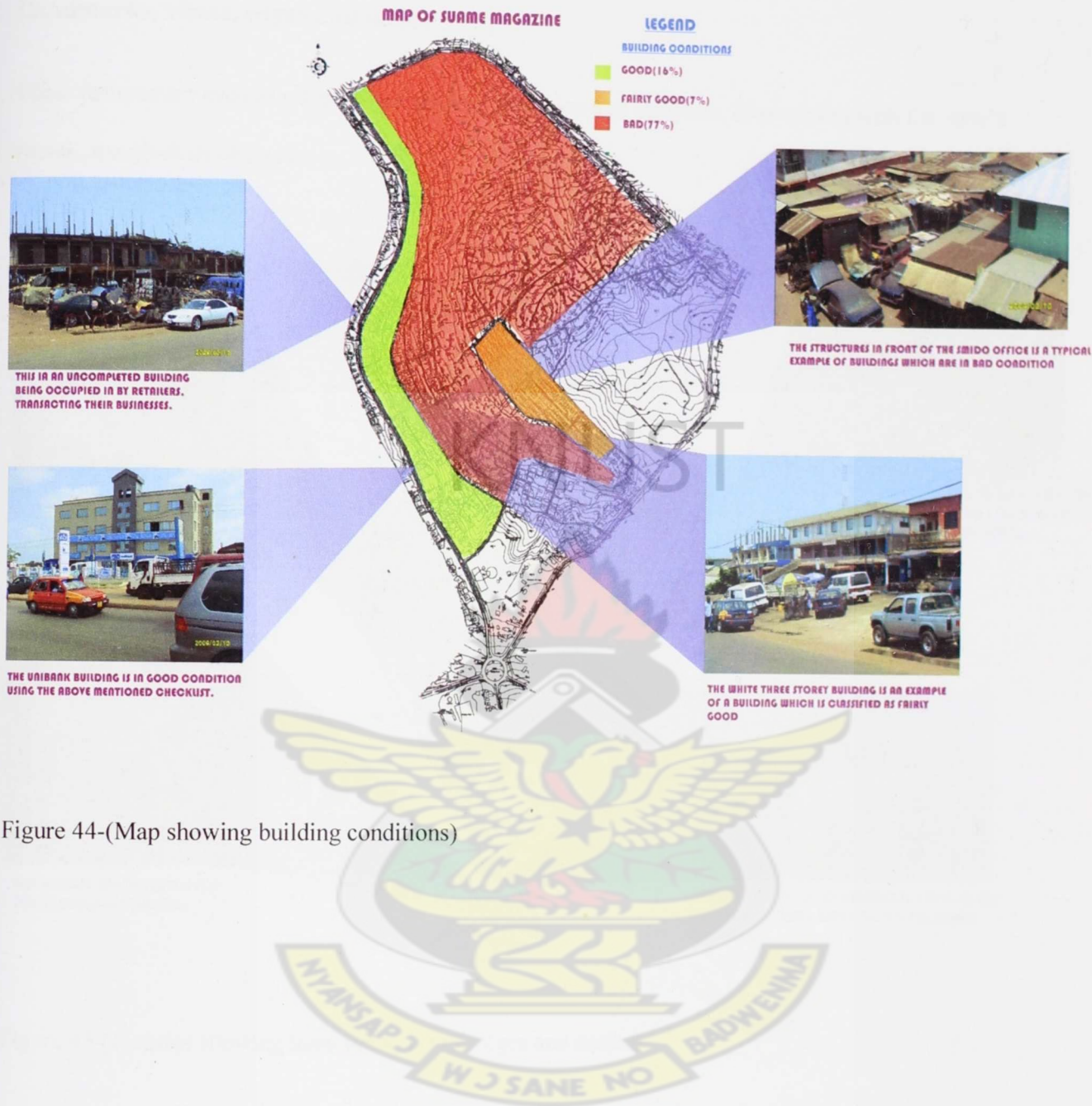


Figure 44-(Map showing building conditions)

Landmarks, vistas, edges and nodes

These features are used as reference points for orientation and direction, inter-woven with the zone's streetscape gives its character.

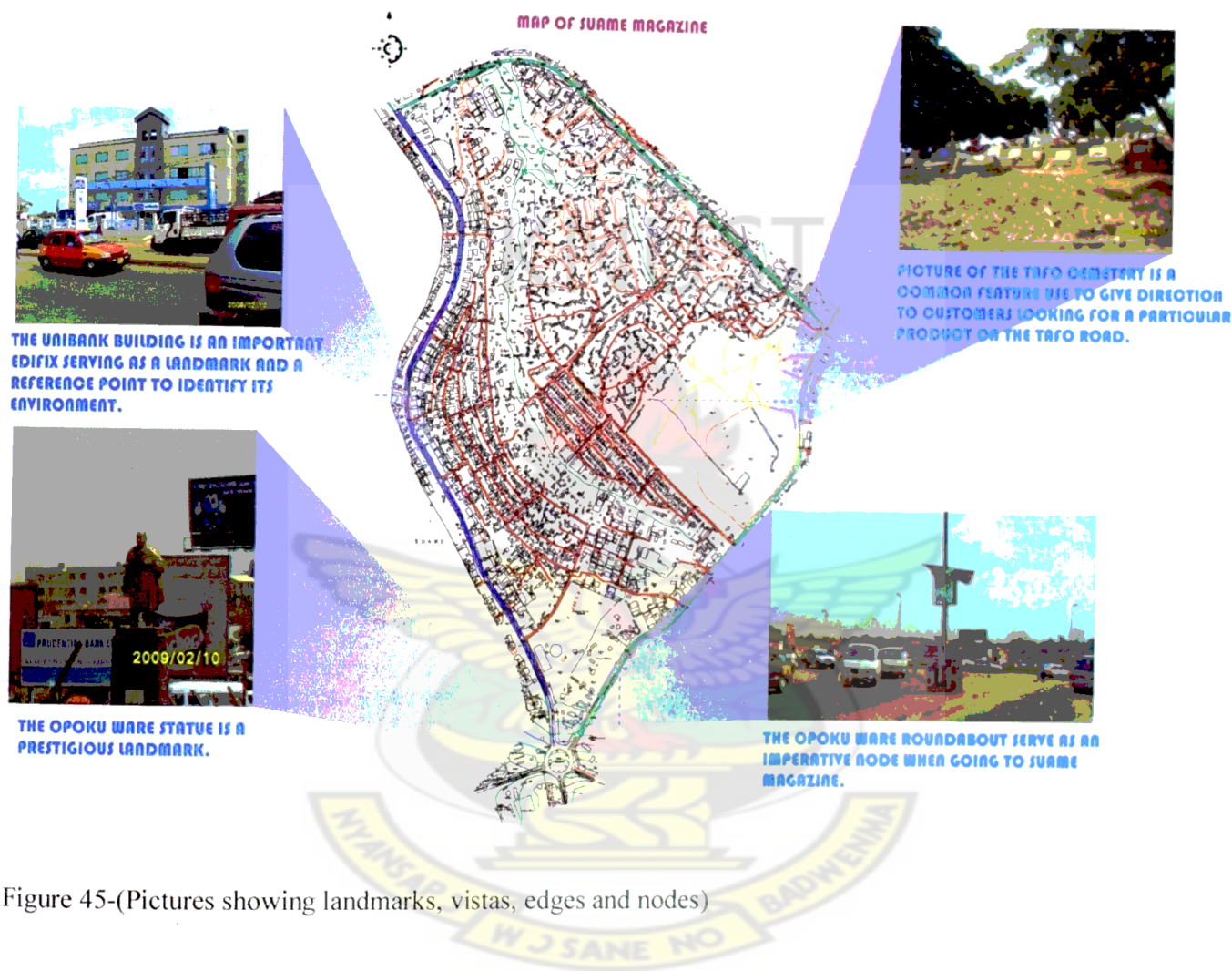


Figure 45-(Pictures showing landmarks, vistas, edges and nodes)



Streetscape and Skyline

90% of the buildings along the main roads were residential structures which were later renovated and used for shops, banks and other commercials purposes. There are different architectural styles seen at Suame including international and modern style. Building height ranges from 5 storeys to single storey. This creates an inter-play of heights in the streetscape show the massing.

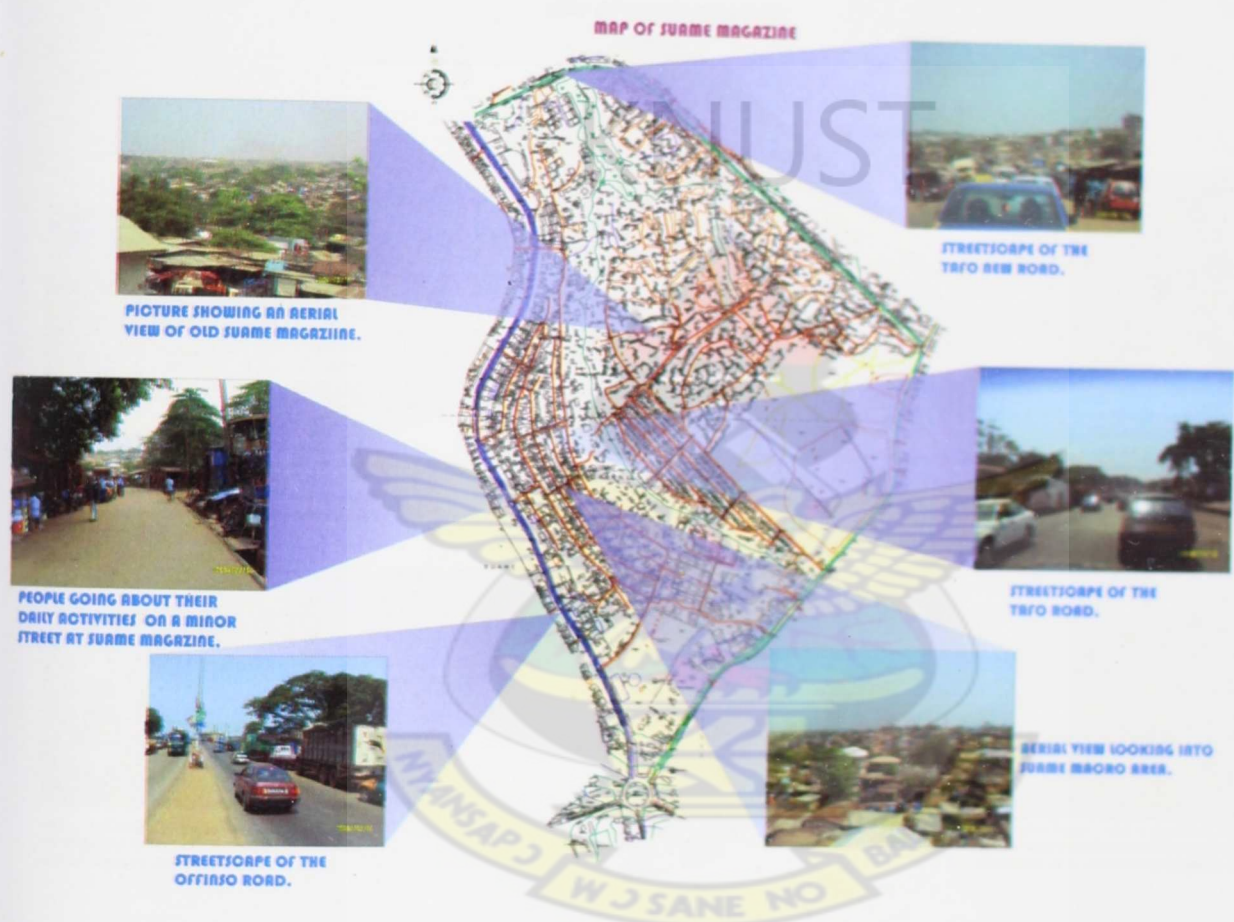


Figure 46-(Pictures showing the streetscape)



Figure 47- (Picture showing the streetscape of the Offinso Road)

LIBRARY  
KWAME NKRUMAH UNIVERSITY OF  
SCIENCE AND TECHNOLOGY  
KUMASI-GHANA



Building materials and finishes

Buildings are grouped based on the following classification;

TYPE 1; Blockwork/concrete and windows with steel doors.

TYPE 2; Wooden structure/steel container with aluminium roofing sheet.

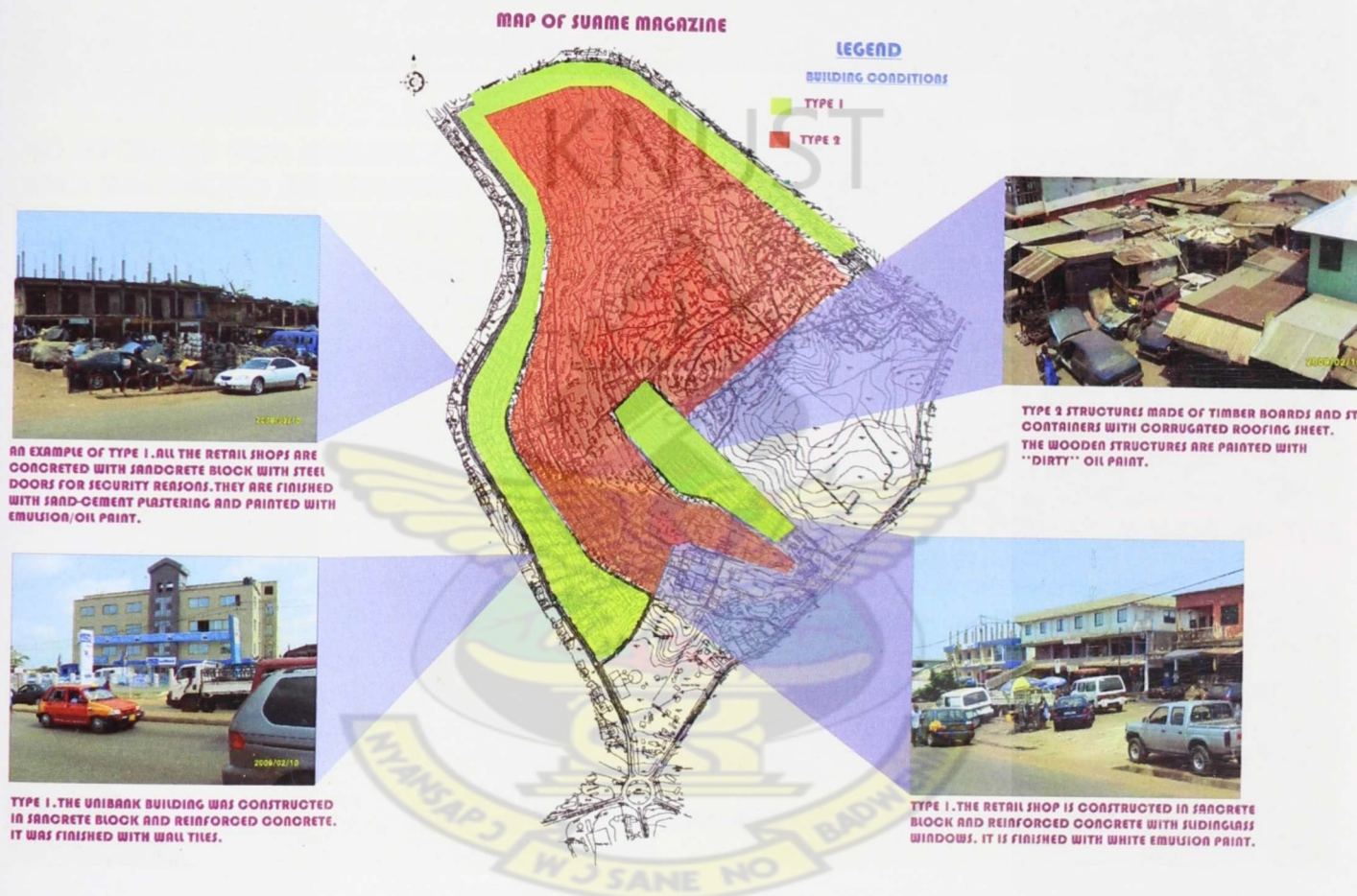


Figure 48- (Map showing the building types)

4.5 PROPOSALS

INTRODUCTION



OBJECTIVES

TO CONTRIBUTE TO THT INDUSTRIAL GROWTH OF SUAME MAGAZINE

TO ATTEMPT FOR ORDERLY, APPROPRIATE AND BALANCED ARRANGEMENT OF LAND USE

TO PROVIDE FOR THE SHORT AND LONG TERM MEASURES THAT CAN HELP DEVELOP SUAME MAGAZINE

ISSUES TO BE CONSIDERED

FORMAL AND VISUAL PERFORMANCE OF THE BUILT ENVIRONMENT

SOCIO-ECONOMIC PERFORMANCE

TECHNICAL PERFORMANCE

MANAGEMENT PERFORMANCE



# PROGRAMME OUTLINE

## EXISTING LAND USE

DETERMINING AREAS OF REGENERATION  
THE MASSING OF SOME SPECIFIC AREAS

## PROPOSED LAND USE

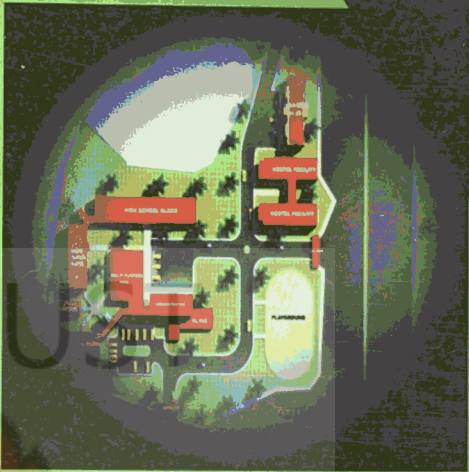
LAND USE OPTIONS  
JUSTIFICATIONS  
PROPOSED MASSING OF SOME SECTORS

## EXISTING ROAD LAYOUT

DETERMINING ARE TYPES OF ROADS AVAILABLE

## PROPOSED ROAD LAYOUT

ROAD LAYOUT OPTIONS  
JUSTIFICATIONS



## PROPOSALS

ROAD NETWORK AND SUAME ROUNDABOUT  
INTERCHANGE(GHANA HIGHWAY PROPOSAL)

LIGHT INDUSTRY

TECHNICAL EDUCATION

TRADE AND COMMERCE

HEALTH CARE

LANDSCAPE



## JUSTIFICATION

THE PROPOSALS WILL BE DRAWN FROM THE SIX FEATURES OF AN URBAN ENVIRONMENT

1. DEMOGRAPHIC PROFILE
2. SOCIAL STRUCTURES
3. ECONOMIC LAYER
4. ENVIRONMENTAL STRUCTURE
5. INFRASTRUCTURE
6. PUBLIC SERVICES SYSTEMS

IN TERMS OF ECONOMIC LAYER OF A CITY,  
THE URBAN ENVIRONMENT WHICH IS A  
GEOGRAPHICAL SPACE MANIFEST THE  
FOLLOWING:

1. HIGH DEGREE OF DIVERGENT ECONOMIC ACTIVITIES
2. MULTIPLE CIRCUITS OF ECONOMIC ACTIVITIES
3. PREVALENCE OF MULTIPLE OCCUPATION

By Charles Essel, lecturer, dept of Arch, KNUST



BASE MAP OF SUAME MAGAZINE

## VISION

TO DEVELOP SUAME MAGAZINE INTO A MODERN INDUSTRIAL CITY  
IN THE 21ST CENTURY.



DEMOGRAPHY

EXISTING TOTAL POPULATION  
20,000 people

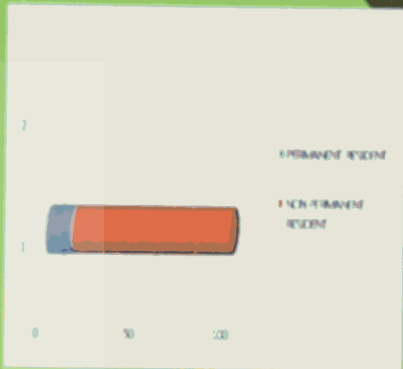
TOTAL LAND AREA  
2,371,899 m<sup>2</sup>.(585.85 ACRES)

EXISTING BUILT AREA  
2,061,659 m<sup>2</sup>.(509.22 ACRES)

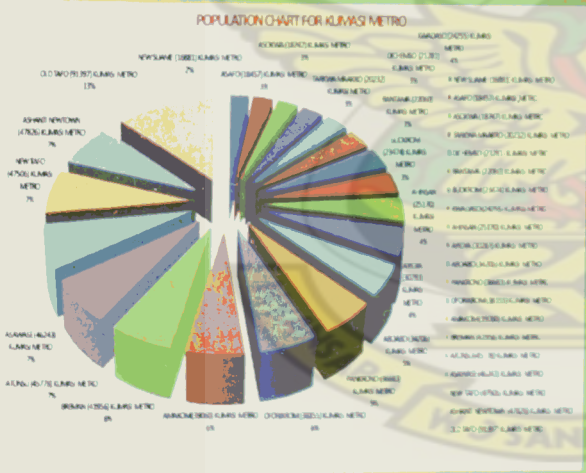
EXISTING UNBUILT AREA  
310, 240 m<sup>2</sup> (76.63 ACRES)



THE GRAPH ABOVE SHOWS THE POPULATION OF SUAME MAGAZINE TO KUMASI METRO



THE GRAPH ABOVE INDICATES MAGRATION SUAME MAGAZINE



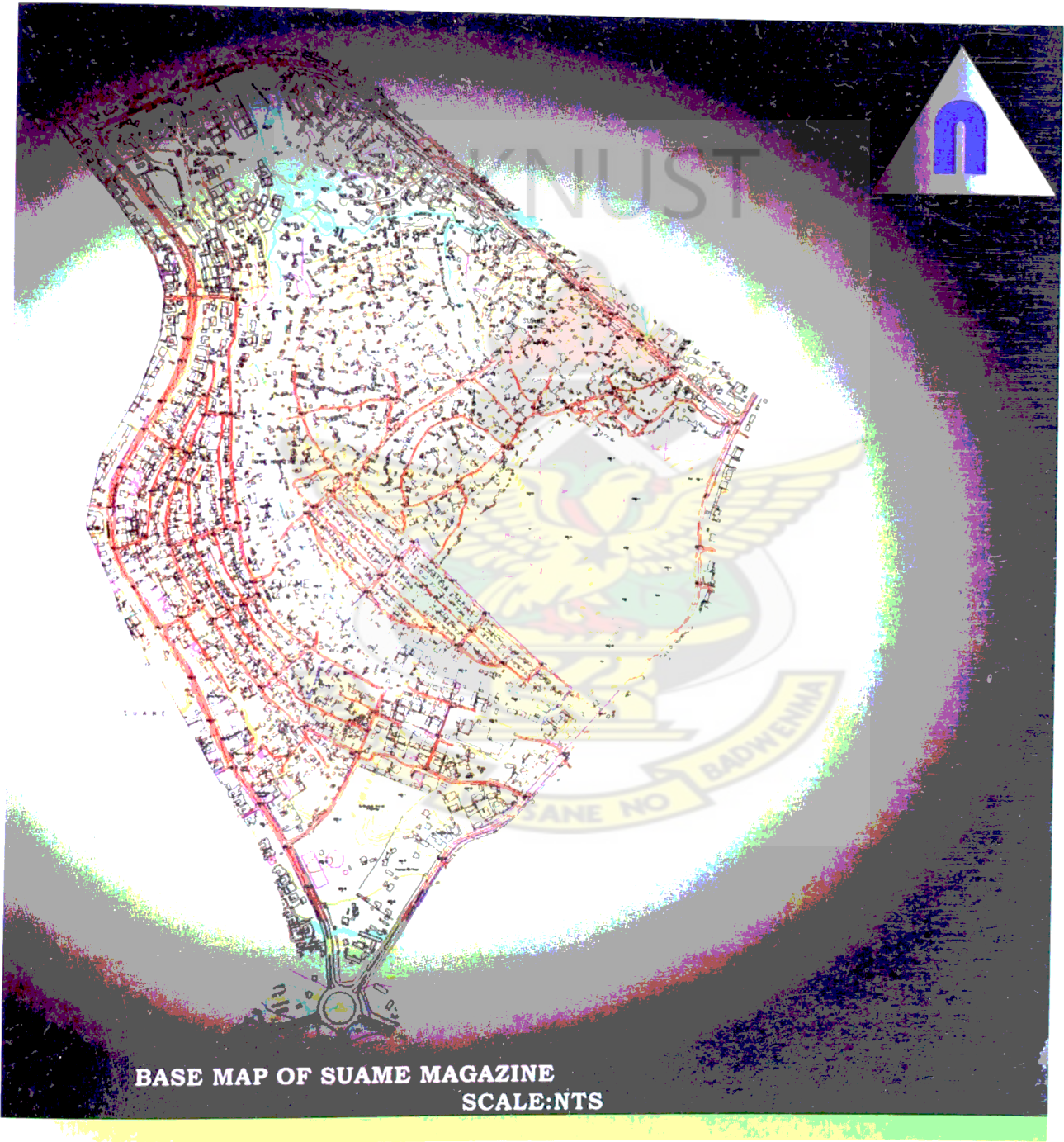
THE GRAPH ABOVE SHOWS THE POPULATION DENSITIES AT KUMASI METRO.

PROJECTED TOTAL POPULATION  
40,000 people by the year 2020

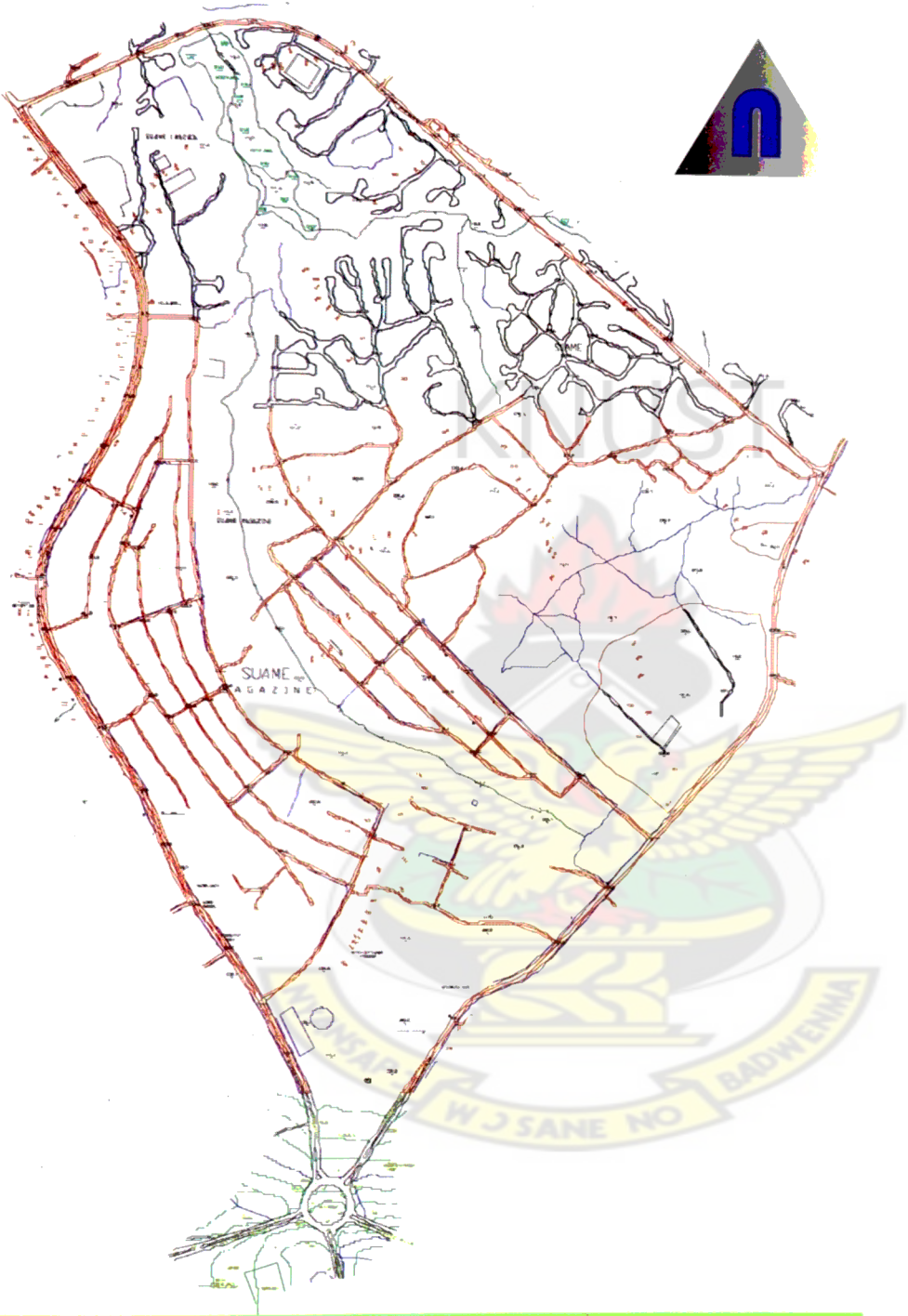
PROJECTED BUILT AREA  
2,061,659 m<sup>2</sup>.(509.22 ACRES)

PROJECTED UNBUILT AREA  
310, 240 m<sup>2</sup> (76.63 ACRES)

EXISTING BASE MAP

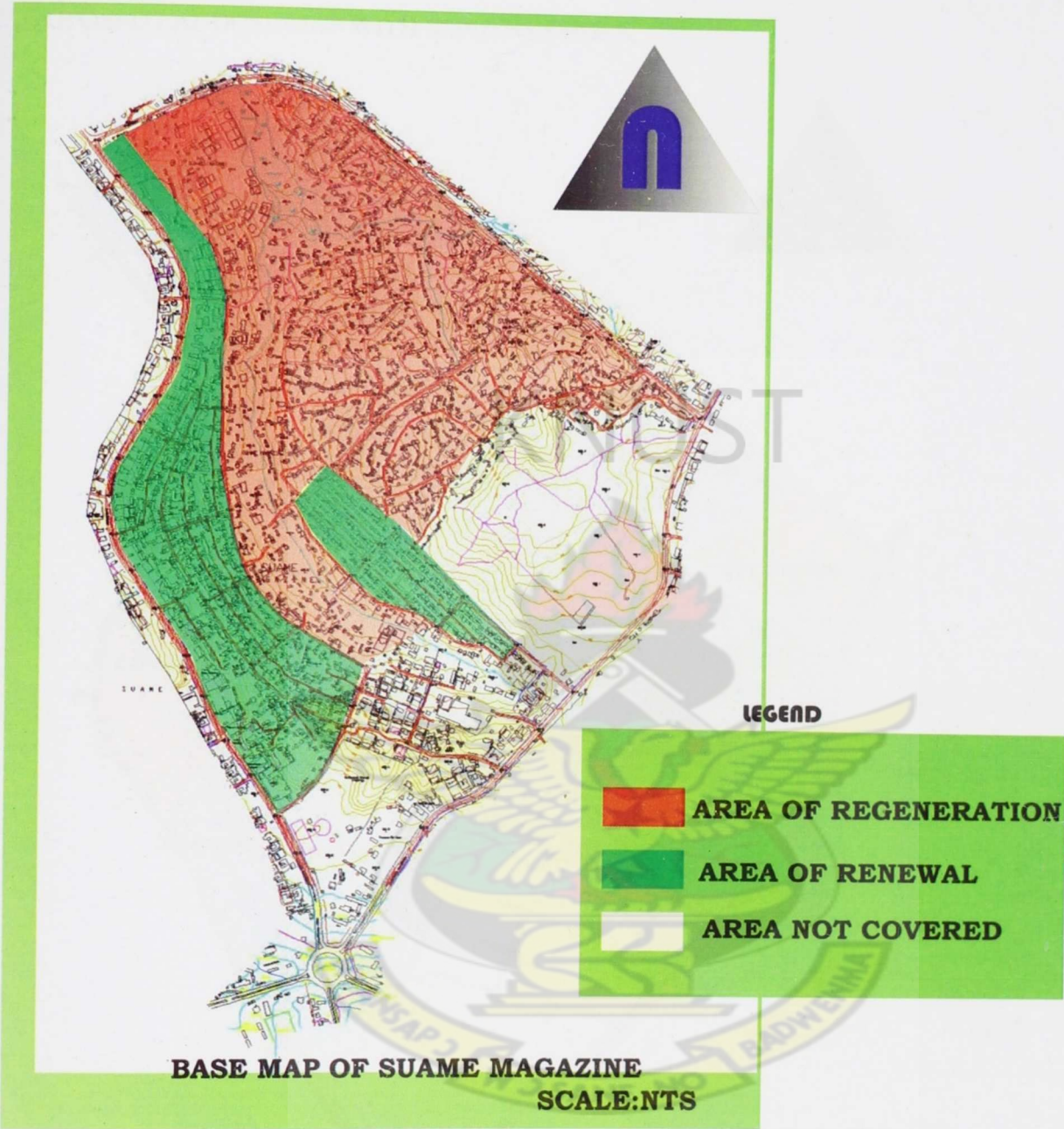


EXISTING ROAD NETWORK





AREA OF REGENERATION





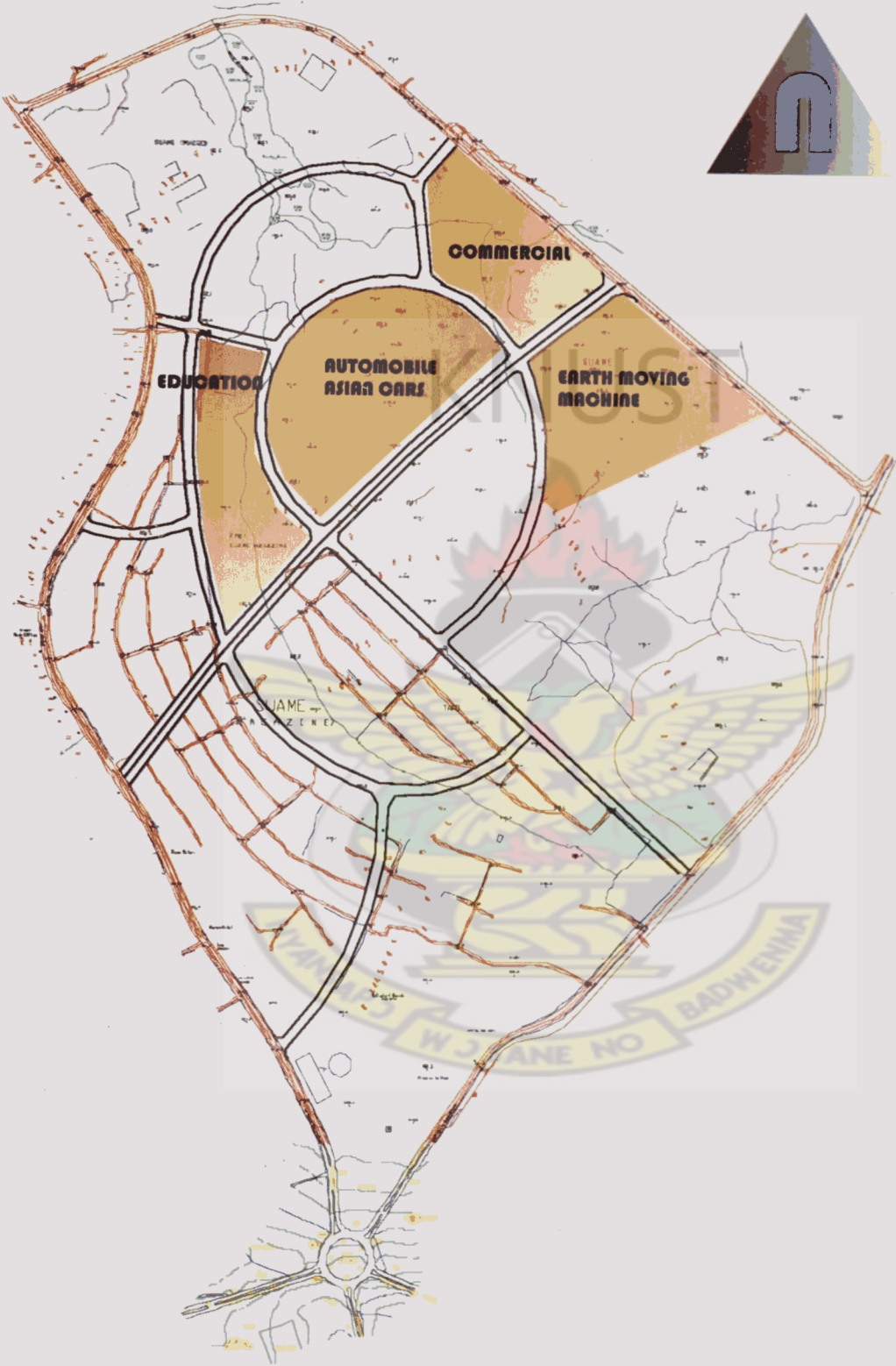
# PROPOSED LANDUSE MAP WITH ROAD NETWORK



PROPOSED ROAD NETWORK

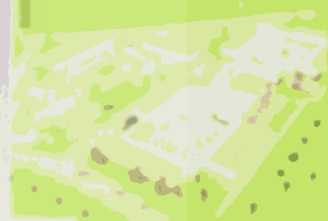
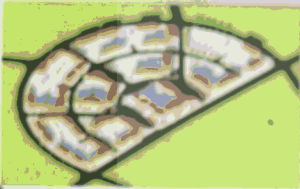
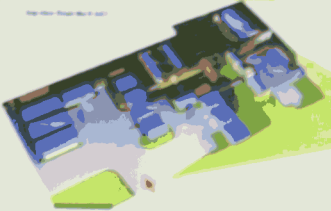


AREA UNDER PHASE ONE



AREAS UNDER PHASE ONE

Map of the Phase One Area



LEGEND



MAGAZINE URBAN DESIGN  
PROPOSAL



4.6 SITE SELECTION AND INVENTORY

SITE LOCATION

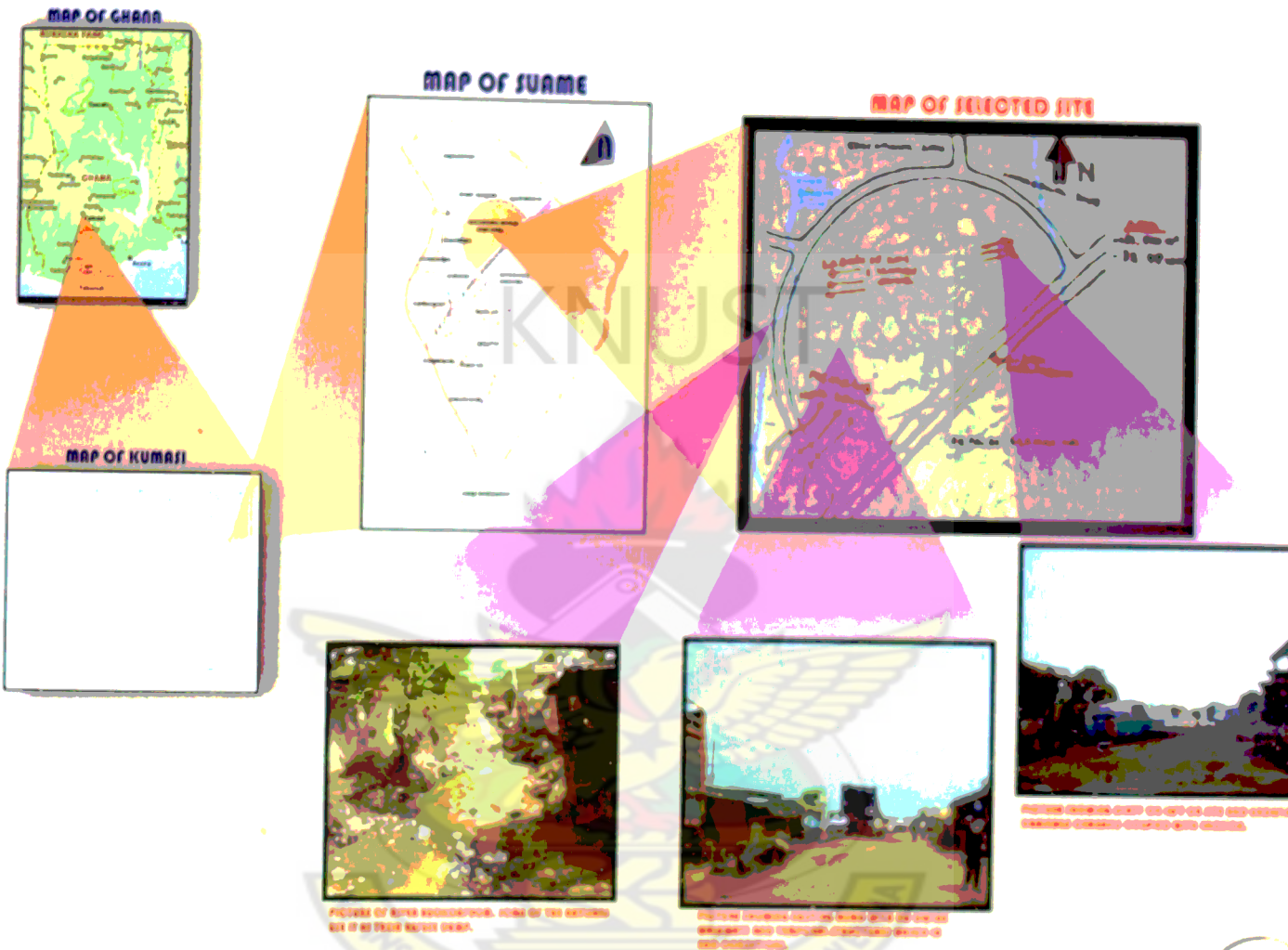


Figure 49 Picture showing site map and inventory

4.7 SITE ANALYSIS

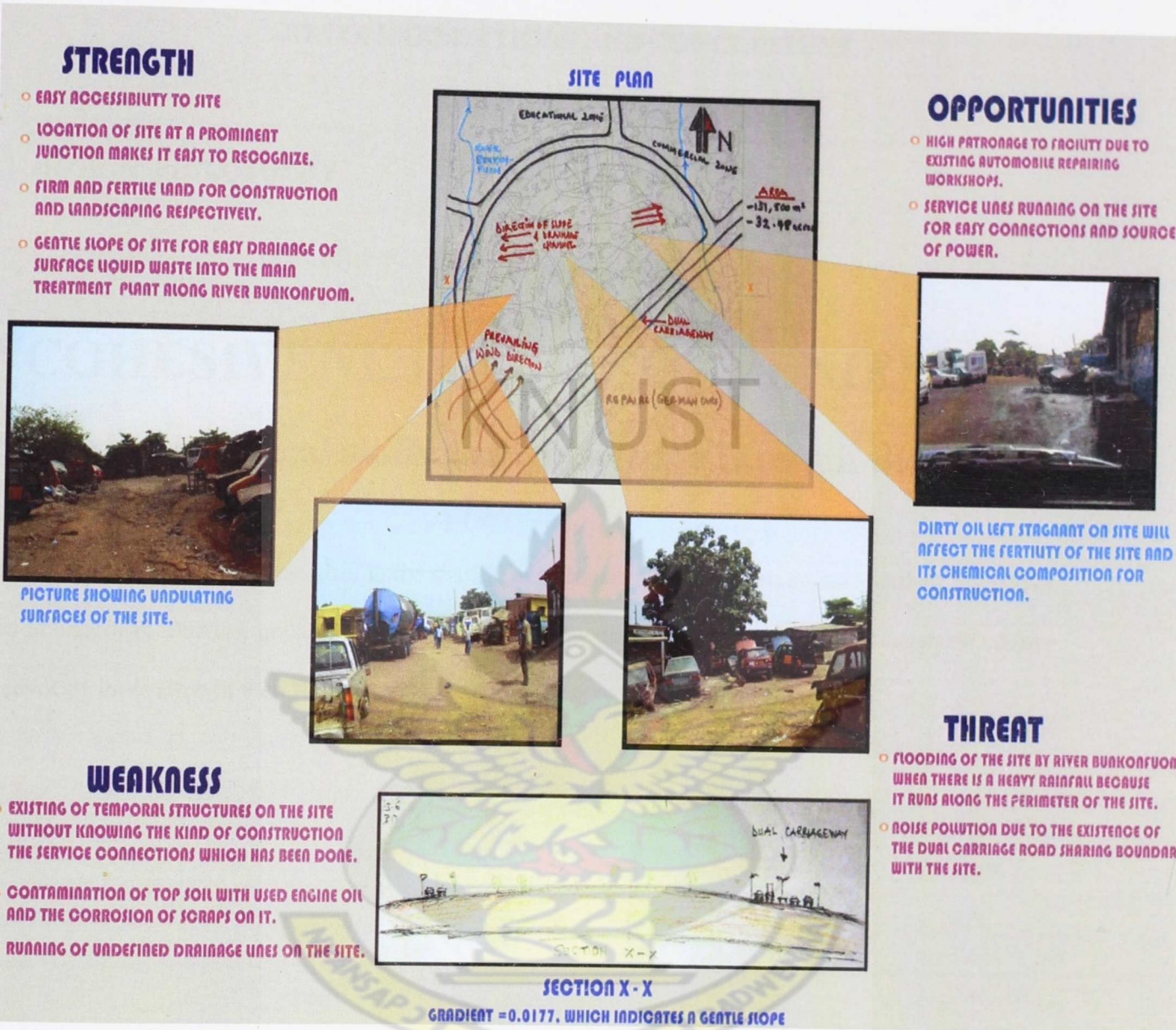


Figure 50 – Picture showing site map and SWOT analysis.

## CHAPTER FIVE

### RECOMMENDATIONS AND CONCLUSIONS

#### 5.1 DESIGN PHILOSOPHY

## **“COHESIVENESS AND CONVENIENCE”**

**“Sharing technical skills and knowledge through the use of cluster”.**

The strength of Suame Magazine lies in the sharing of technical skills between artisans in their respective area of expertise. This is a good thing and I want to use my design to promote this commendable culture to advocate innovation in their future projects.



5.2 DEVELOPED BRIEF AND ACCOMMODATION SCHEDULE

Administration

1. Artisans' union office.....	300m <sup>2</sup>
2. Spare parts union office.....	300m <sup>2</sup>
3. Internal Revenue office.....	240m <sup>2</sup>
4. Environmental protection agency office.....	180m <sup>2</sup>
5. Conference room.....	150m <sup>2</sup>
6. Security company's office.....	24m <sup>2</sup>
7. Washrooms.....	60m <sup>2</sup>
8. Security post.....	24m <sup>2</sup>
9. Parking space.....	1500m <sup>2</sup>
Total.....	2954m <sup>2</sup>

Commercial

10. Pharmacy shop.....	150m <sup>2</sup>
11. Mini Mart.....	150m <sup>2</sup>
12. Forex Bureau.....	77m <sup>2</sup>
13. Clinic.....	200m <sup>2</sup>
14. Restaurant.....	240m <sup>2</sup>
15. Credit union.....	500m <sup>2</sup>
16. Internet café.....	200m <sup>2</sup>
17. Lettable office space.....	1000m <sup>2</sup>
18. Parking space.....	1700m <sup>2</sup>
19. Security post.....	24m <sup>2</sup>
Total.....	4241m <sup>2</sup>



**1 Workshop Cluster**

20. Workshops.....	648m <sup>2</sup>
21. Master’s Office.....	90m <sup>2</sup>
22. Storage space.....	120m <sup>2</sup>
23. Conference room.....	150m <sup>2</sup>
24. Supporting Specialists.....	550m <sup>2</sup>
25. Restaurant.....	110m <sup>2</sup>
26. Wash/Changing room.....	144m <sup>2</sup>
27. Parking space.....	2251m <sup>2</sup>
28. Security post.....	24m <sup>2</sup>
Total.....	5233 m <sup>2</sup>

**1 Spare parts Cluster**

29. Shops.....	2600m <sup>2</sup>
30. Restaurant.....	145m <sup>2</sup>
31. Storage room.....	120m <sup>2</sup>
32. Washroom.....	70m <sup>2</sup>
33. Parking space.....	2000m <sup>2</sup>
34. Security post.....	24m <sup>2</sup>
Total.....	4959m <sup>2</sup>

**1 Waste Management and Biogas Plant**

35. Biogas Waste Management Plant.....	4000m <sup>2</sup>
36. Landscape.....	8000m <sup>2</sup>
<b>GRAND TOTAL.....</b>	<b>88000m<sup>2</sup></b>





5.4 MODIFIED OPTION 3

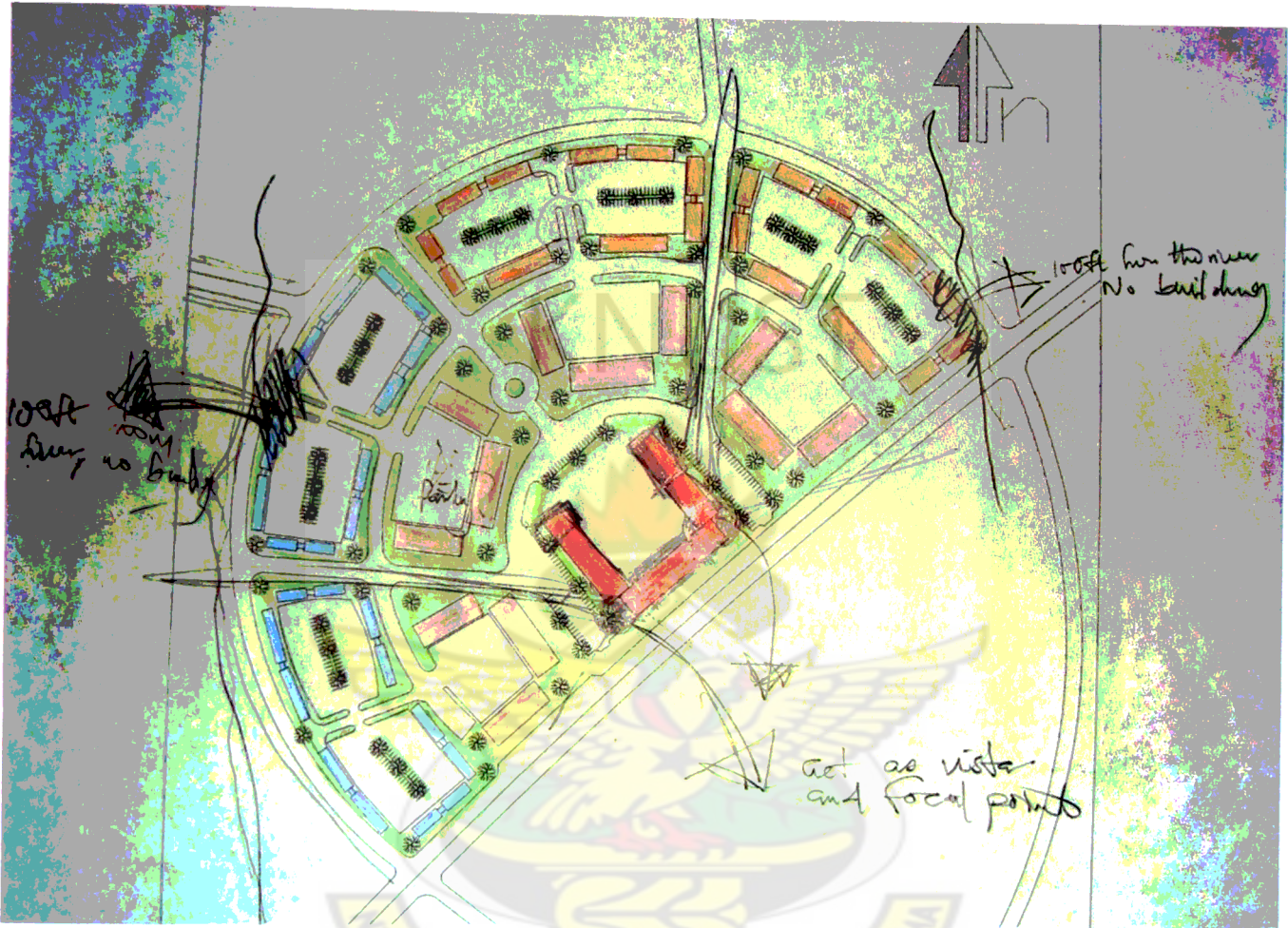


Figure 52 – Picture showing conceptual site planning 2.

At this stage, the forms of the various clusters are being developed. Each cluster has a U-shaped form, creative a working courtyard. This provides a common platform for the artisans and spare parts dealers to share their technical skills. Barriers between the administration and artisans are removed since it is easier to for each party to communicate because they are all in the same planned neighbourhood. More greenery is introduced to help reduce carbon emission into the working environment, hence providing them with a cleaner industrial centre.

## 5.5 BLOCK PLAN

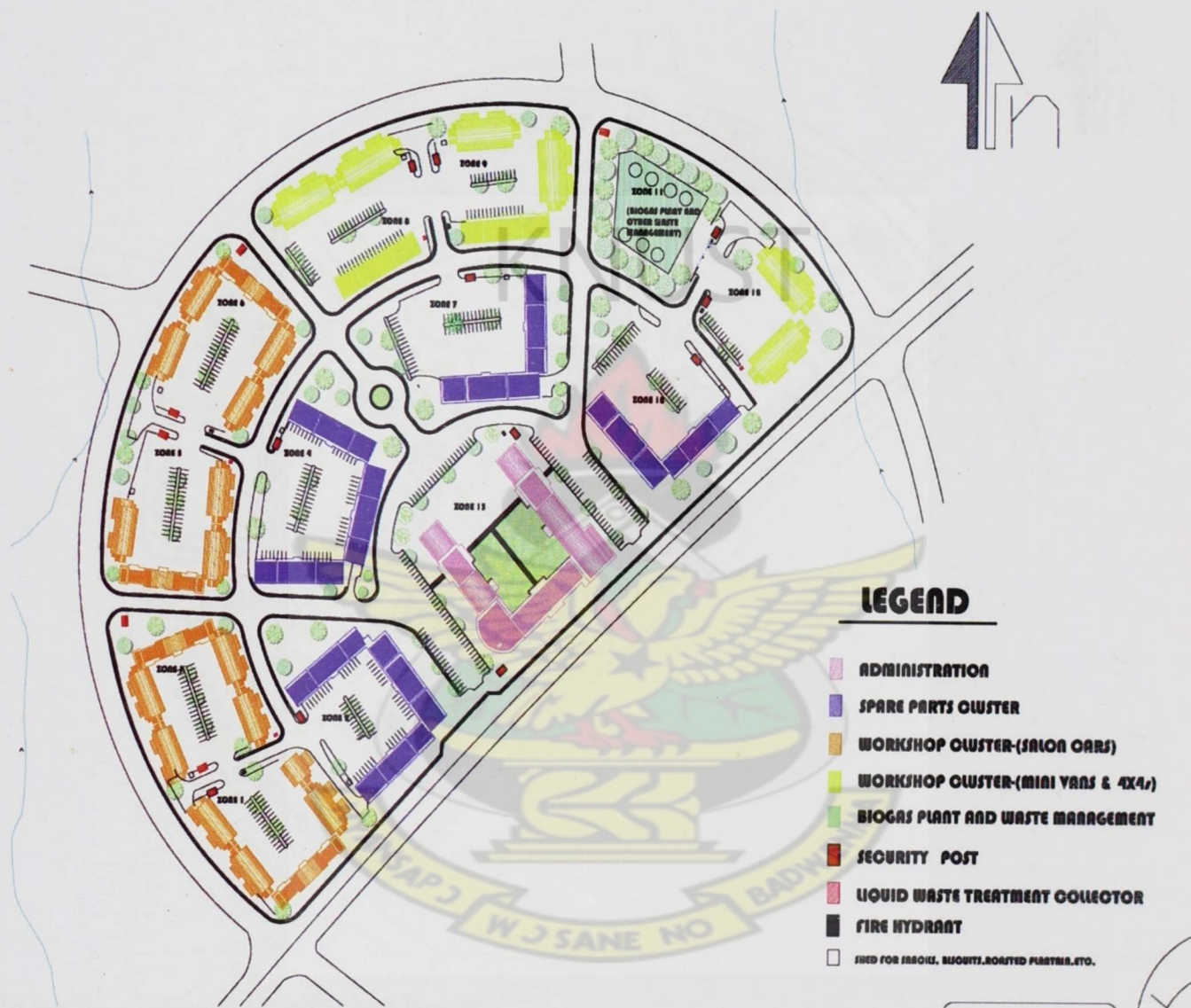


Figure 53 – Drawing showing Block Plan



5.6 SITE LAYOUT

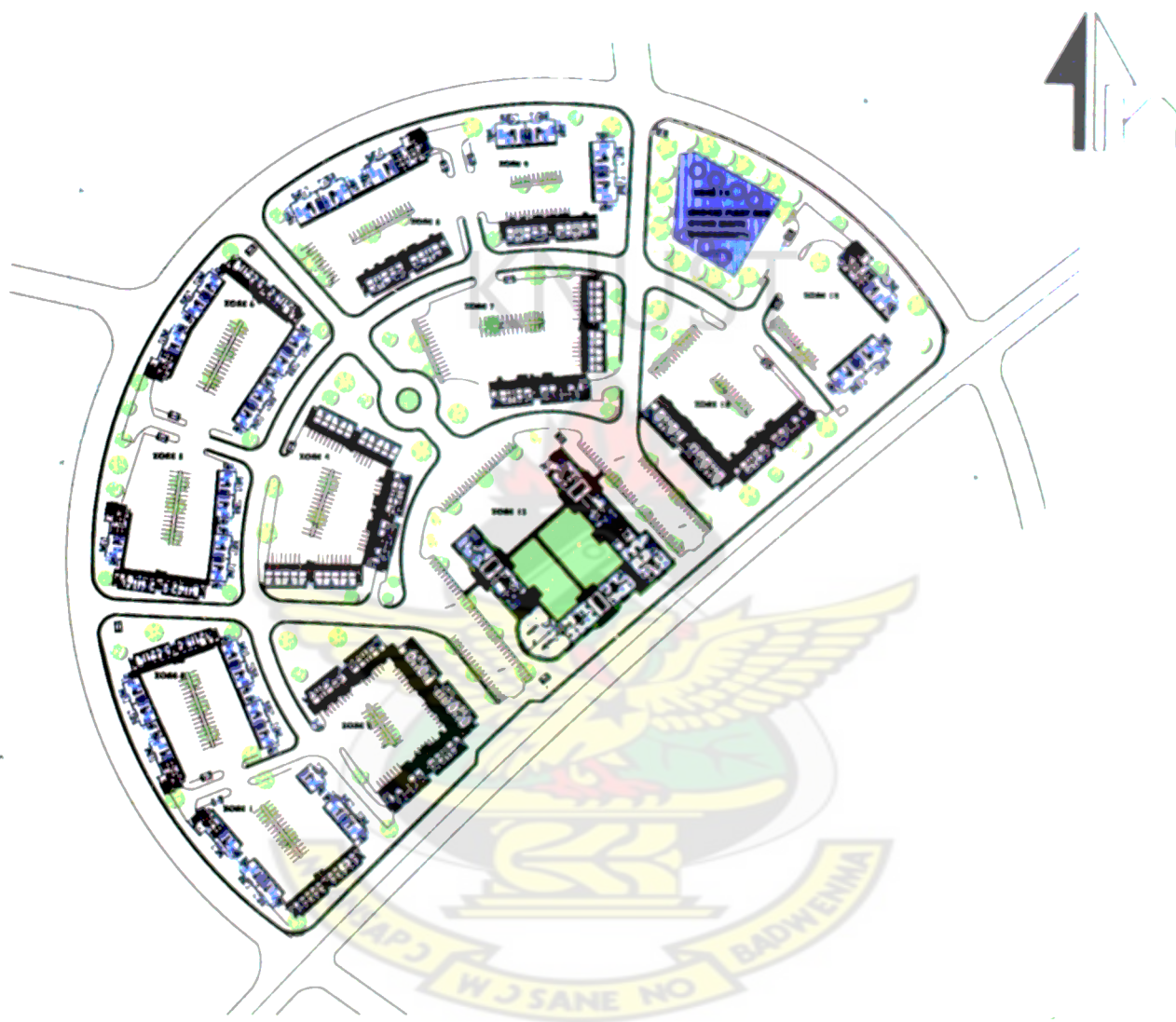


Figure 54 – Drawing showing Site layout

5.7 FLOOR PLANS

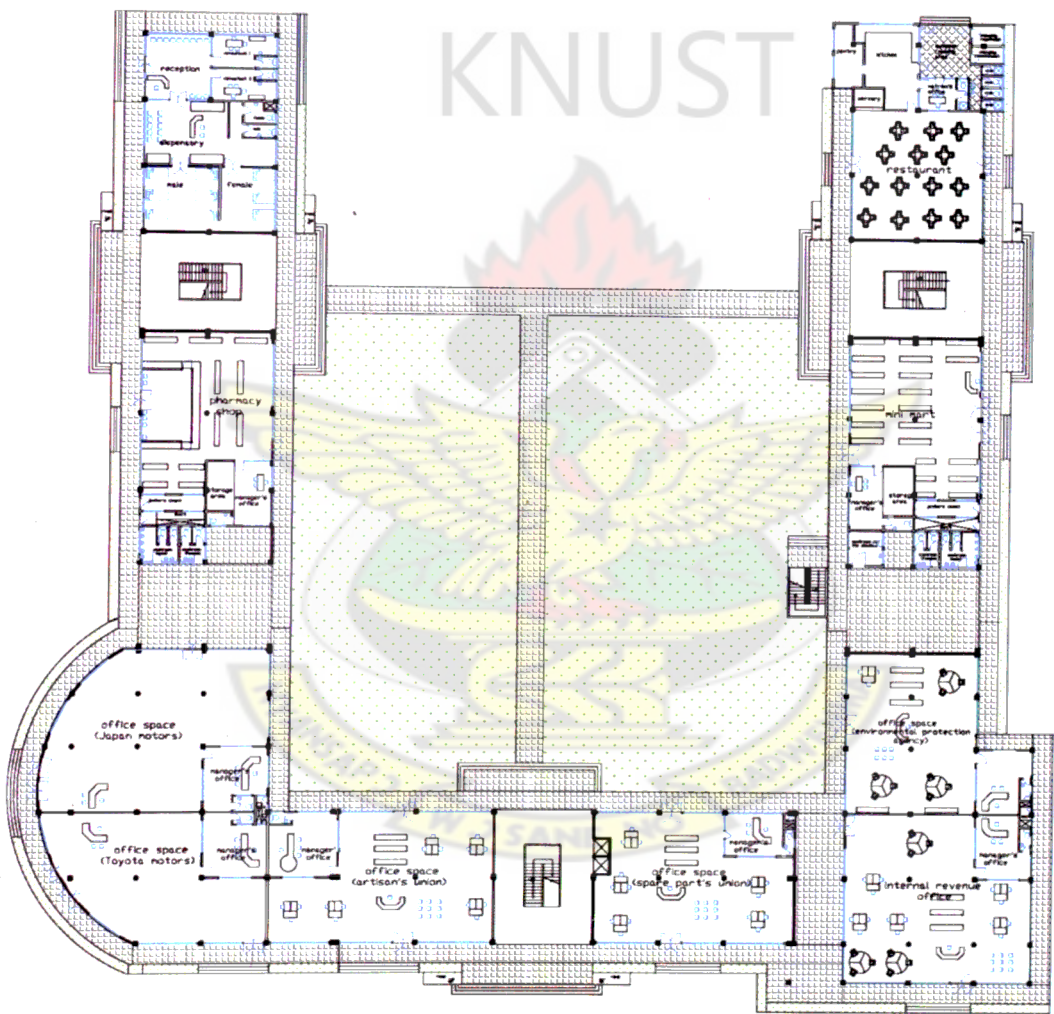


Figure 55- Drawing showing Ground floor Plan of Administration Block

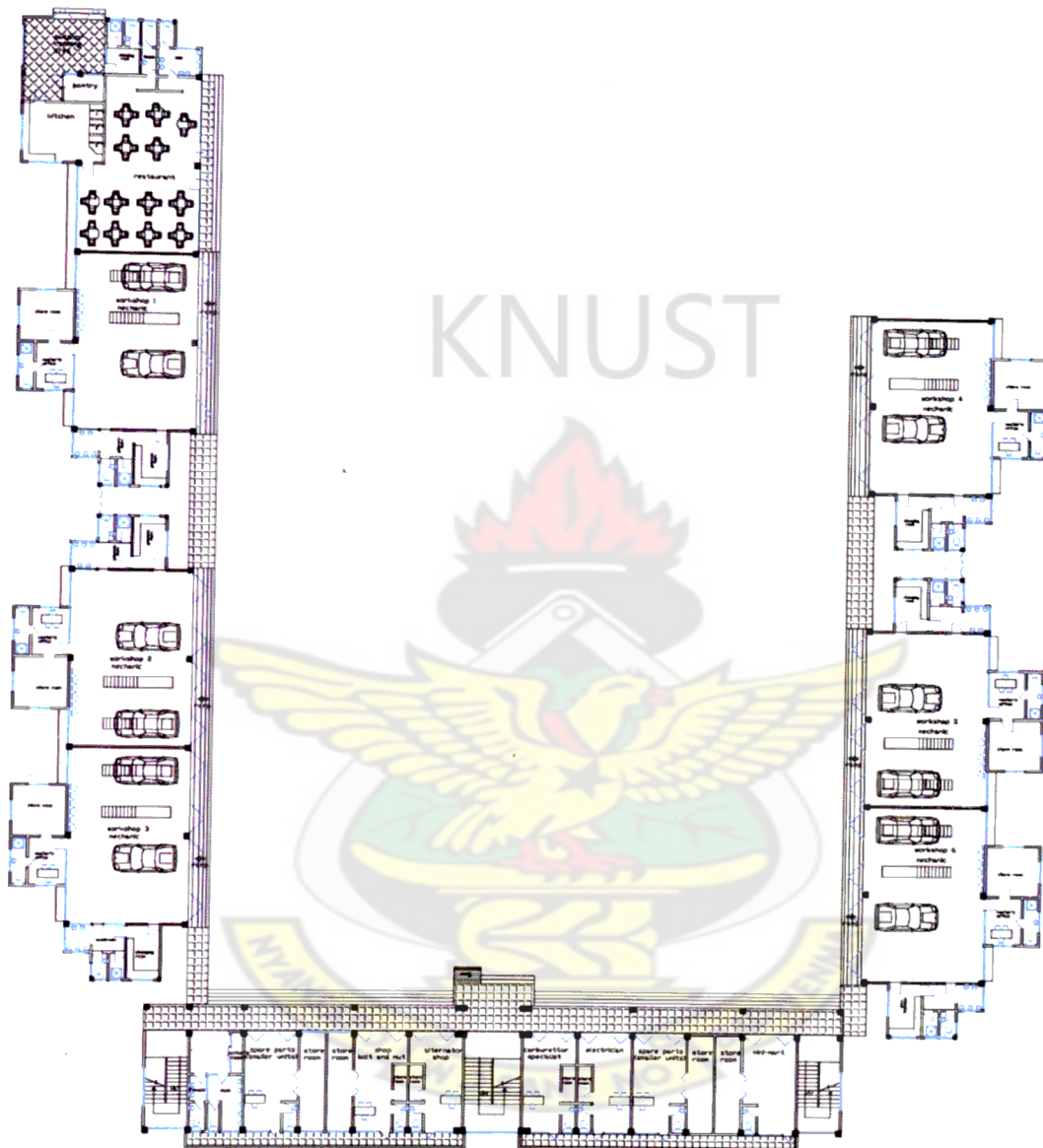


Figure 56- Drawing showing Ground floor plan of workshop cluster

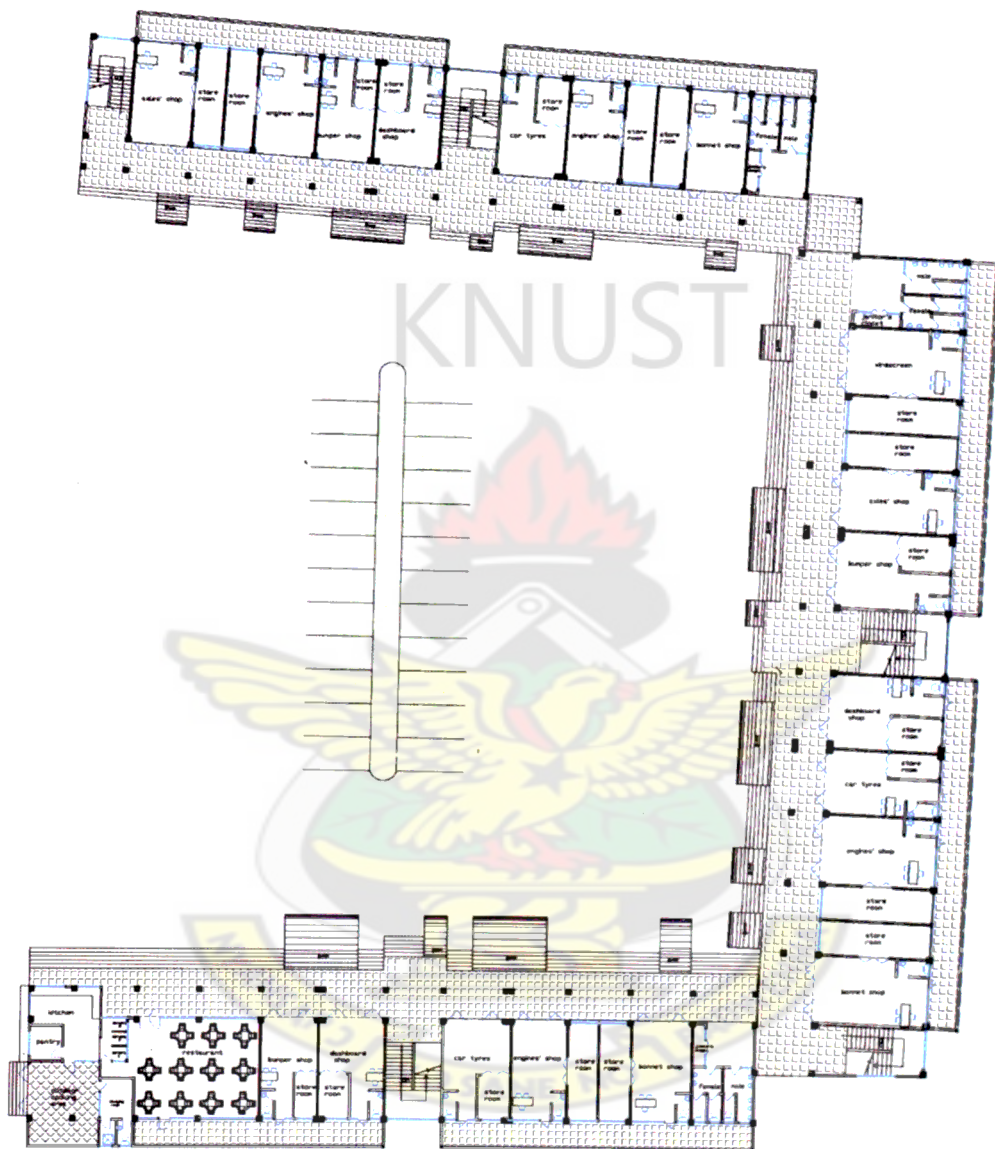


Figure 57- Drawing showing Ground floor plan of spareparts cluster



## 5.8 STREET FACDE AND SECTION



Figure 58- Drawings showing street facade and section

The façade of the buildings was designed to take advantage of the various heights of the site; hence the interplay of levels is seen in the elevation. The Administration block is centrally located and has the highest point because of its prominent. It also has a symbolic crown top which indicates the king of the zone. The workshops and spare parts clusters have pronounce barrel roofs because of its industrial nature.

## 5.9 PERSPECTIVES



Figure 59-Perspective of the Administrative block



Figure 60-Perspective of the Workshop cluster

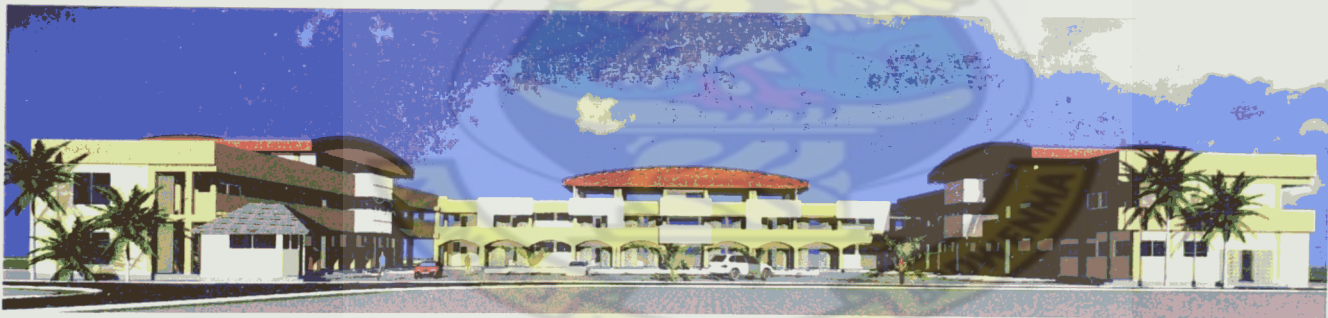


Figure 61-Perspective of the Spareparts cluster

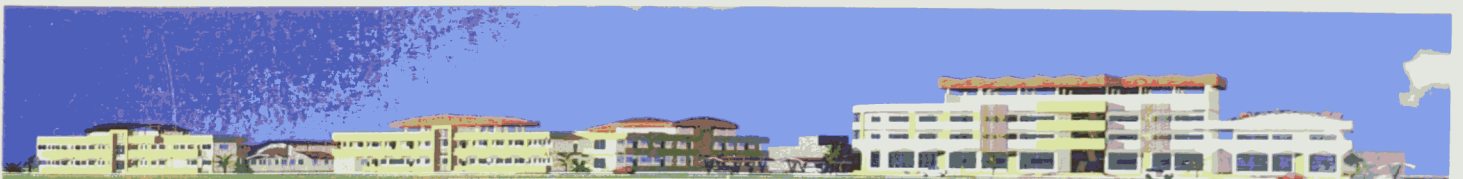


Figure 62-Street Perspective

## 5.10 STRUCTURE

The administration block operates on a post and beam structural system with a parapet roof. The workshop and spare parts cluster both have a post and beam structural model with a trussed barrel roof

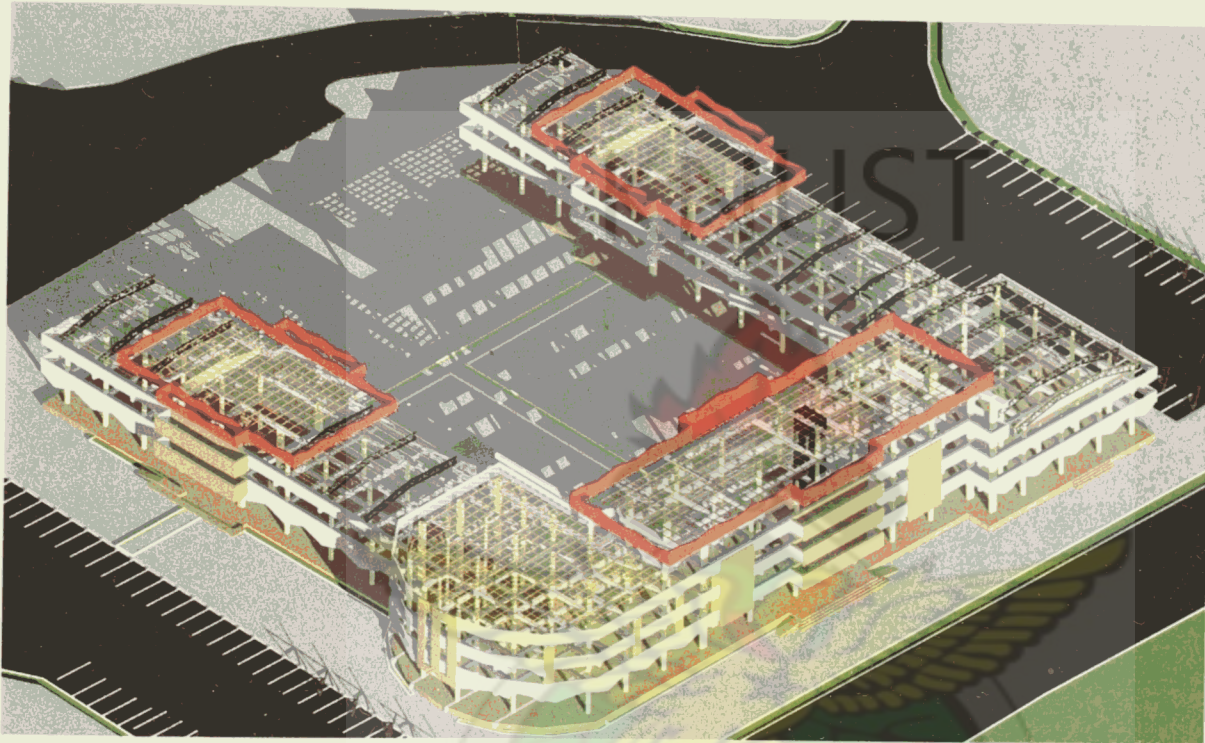


Figure 63-Structural Model of Administration Block



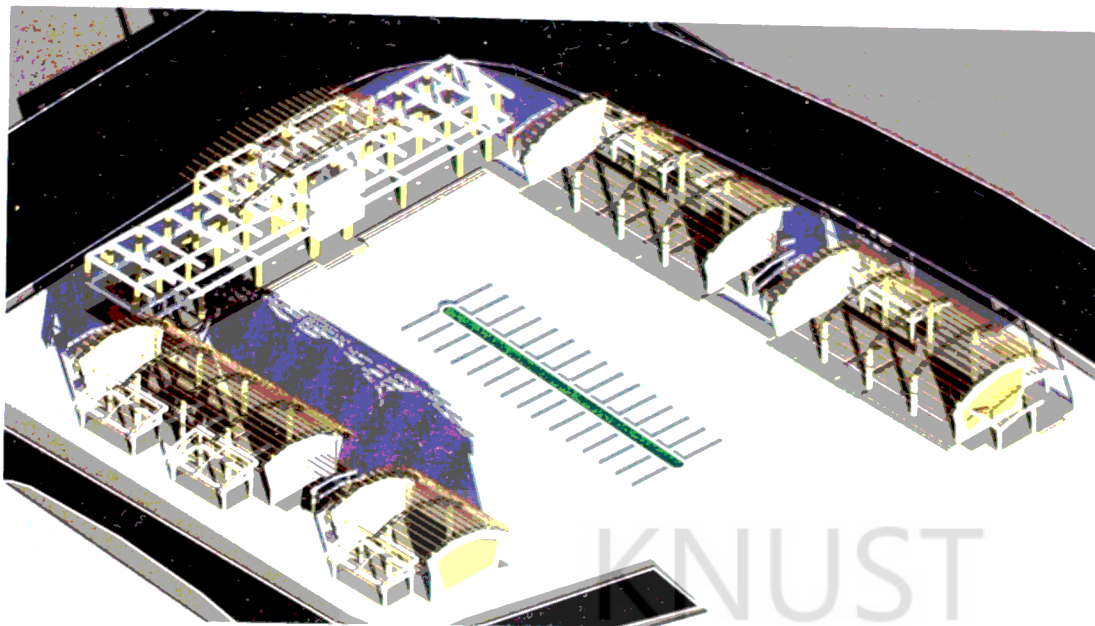


Figure 64-Structural Model of Workshop Cluster

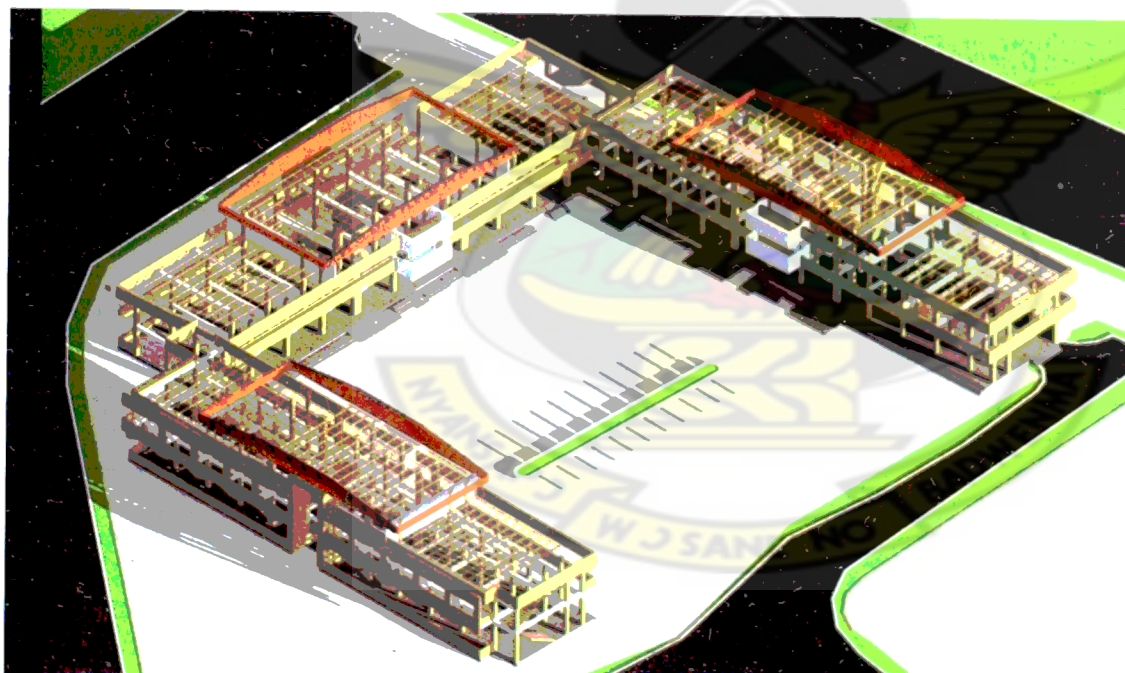


Figure 65-Structural Model of Spareparts Cluster



## **5.11 SERVICES**

### **1. Electricity**

The project will be on the national electricity grid and the biogas plant provided in the zone will supplement it. Power will be tapped from the 500KVA transformer which is about 100m away from the site. The biogas plant will provide power for the streetlights at night which will improve the security in the zone.

### **2. Water supply**

Rain water will be harvested through the use of roof gutters and directed to plants, where they will be treated and stored to supplement water from Ghana Water Company Limited.

### **3. Lighting and Ventilation**

Artificial lighting was use in the Administrative block with the support of natural lighting through the use of large windows to allow the penetration of natural lights and natural ventilation. Air conditioning systems where used in some facilities in the administrative block (e.g. Pharmacy, clinic and some of the office space.)

Natural lighting was predominantly use in the workshop and spare parts clusters. Some transparent roofing sheets were used in the workshops to increase the illumination levels.

Streetlights are placed along the peripheral of the roads and in courts to help artisans who might be working late and for the security men to effectively monitor and prevent theft cases.

#### **4. Security**

Security posts are provided at the main entrances into the zone and at each cluster to monitor the flow of activities. CCTV cameras will be fixed at vantage points to provide daily video coverage of business transactions of the day.

#### **5. Fire Hydrant**

Fire hydrants will be installed at each workshop cluster which will be accessed in the event of a fire outbreak. Fire/smoke detection devices will be fixed in the administration and other blocks.

Fire hydrants shall be of the sluice valve type to BS 750 comprising a cast iron key operated sluice valve complete with a socket adapter, a duck foot bend and an outlet adaptor or approved equal. The adaptor shall have a standard Belfast Pattern Outlet with the female thread protected by a brass cap and chain. The hydrant fitting shall be tee off from the mains. Each hydrant shall be provided with a heavy duty cast iron hinged hydrant box to BS 750 with the words fire hydrant cast on the cover. The top of the hydrant box shall be painted red.

A 300 by 200 indicator plate of aluminum construction shall be provided with an inscription of “fire hydrant”. The plate shall be supported at 600mm high above ground level by channel steel support. Both plate and support shall be painted in red colour and installed about 1,000m from the hydrant.

## **5.12 ENVIRONMENTAL IMPACT ASSESSMENT**

The Automobile repairs centre raises the following major environmental problems and these are their proposed solutions.

### **1. Carbon Emission**

About 20% of the site has been allocated to greenery. This is to help absorb a considerable amount of the carbon emissions from the waste products of the burning fuel from the automobiles. This is also assist in the combat of global warming and provides a cleaner environment for the workers at Suame Magazine.

### **2. Disposal of oil waste**

Presently at Suame Magazine, oil wastes are disposed off into streams and on their working yards without being treated. This destroys the few existing vegetations and also the fertility of the soil. To solve this problem, I have introduces a waste treatment collector where all the oil waste will be treated before they are disposed off into the main drainage channel. The treatment collector will neutralized the harmful components in the oil waste and will not pose any treat to the environment when disposed off.

### **3. Metal scraps**

Metal scraps from each zone will be transported to the waste treatment centre where they will be compressed into modules. These will then be transported to factories in Tema which deal in metal products to use in their production.

### 5.13 COSTING

SPACE	SQUARE AREA	UNIT COST ((GHC)	TOTAL(GHC)
ADMINISTRATION	9472m <sup>2</sup>	450	4,262,400
WORKSHOP CLUSTER(7 UNITS)	17514m <sup>2</sup>	350	6,129,900
SPAREPARTS CLUSTER(4 UNITS)	17240m <sup>2</sup>	350	6,034,000
GRAND TOTAL			16,426,300





## 5.14 CONCLUSIONS

- With the escalating number of artisans at Suame Magazine, this project will accommodate the existing population at the Magazine comfortably and an anticipated 60% increment in the future without any congestion.
- This project with its proposed road network will help reduce the traffic jams at Suame Magazine considerably and improve productivity and shorter travel time in and around Suame.
- The project with its environmental impact assessment solutions will provide a cleaner and sustainable environment for the artisans working in the various zones.
- This project will provide a common working platform for artisans, spare parts dealers and supporting institutions for the exchange of ideas within a conducive working environment. This will increase work efficiency and curtail time spent in walking long distances to purchase spare parts.
- The problem of identification and location of workshops for customers and financial institutions is eliminated with the zoning and naming of the workshops. This can help ease the accessibility of loans and other financial supports from credit institutions.
- It is my wish that this project will serve as a reference point for students and professionals who might want to design similar facilities for artisans in the automobile industry.

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## APPENDIX I

### THESIS QUESTIONNAIRE

TOPIC: REDEVELOPMENT OF SUAME MAGAZINE

KWAME NKRUMAH UNIVERSITY OF SCIENCE AND TECHNOLOGY

POST-GRADUATE DIPLOMA IN ARCHITECTURE

JUNE 09

Name:

Sex: male [ ] female [ ]

Age:

Date:

---

1. What is the area of your expertise? Do you have any other profession?

Ans:

2. Master or Apprentice? If Master, how many workers?

Ans:

3. How long have you been working here?

Ans:

4. What time do you come to work and from which area? What is the means of transport?

Ans:

5. What systems do you work in this area? Clusters (Precinct) or Disperse

Ans:

6. Which one do you prefer and why?

Ans:

7. How do you acquire space/land here to operate?

Ans:

8. How do customers come in, park and how are they attended to? How many customers do you normally service in a day?

Ans.

9. If cars are not service the same day, how are they secured to be operated on the following day.

Ans:

10. What are your major sources of market? Inter regional, international or both?

Ans

11. How do you dispose of waste; dirty oil, scraps, etc?

Ans:

12. How do you bring in and store your products?

Ans:

13. Do you have any health facility at Suame magazine and if not, how far do you have to travel to get to the nearest one?

Ans:

14. Have you experienced fire outbreak in Suame Magazine before? How did it happen? Do you have safety measures to prevent fire?

Ans:

15. How often have you heard of theft cases in and around the Suame Magazine?

What security systems do you have in place? Individuals or collective security system?

Ans:

16. What material do you use for building your work station and why? Cost of the material?



Ans:

17. Do you have adequate sanitary facilities? Did you build it or is being provided by the KMA or a private owner? How much does it cost to access one if you don't have it?

Ans:

18. What is the traffic situation in and around Suame Magazine? How do people maneuver their way through?

Ans:

19. Are you comfortable (noise, traffic, space) with your current workstation? If yes or no, why?

Ans:

20. What is the coordination between KMA and the workers of the Magazine? Do you pay any form of taxes and do you receive the necessary services and support of the KMA?

Ans:

21. Will you accept to have some form of formal training?

Ans:

24. Do you bring your children to work place?

Ans:

25. Do you have schools in and around Suame Magazine? If yes, do you send your children there and why?

Ans:

26. Where do you get food during break time (breakfast, lunch or supper)?

Ans:

27. Do you have banks in the area and do you save your money there? If yes or no, why?

Ans:

28. Do you have any workers associations and which one do you join? What kind of support to you receive from these associations?

Ans:

29. What is the accommodation situation for apprentices and master? Do they sleep in the workshops or rent places in and around the suburbs?

Ans:

30. Is there any coordination between the workers of Suame and the Engineering Department of KNUST? If yes, what are the arrangements and if no why not?

31. How do you want the magazine to look like in the next 10 years? (Planning, technology and machinery)

Ans:

32. What happens when it rains? (Drainage, shelters for customers and workers, etc.)

32. Do you know the history of Suame? How is started and the various stages and transitions it has been through over the years?

Ans:

