PHYSICAL PLANNING FOR UNCONTROLLED SETTLEMENTS AT MOMBASA MAINLAND SOUTH

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This thesis is my original work and has not been presented for a degree in any other University

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A C K N O W L E D G E M E N T S

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ABSTRACT

The study was aimed at preparing a physical development plan for uncontrolled settlements at Mombasa Mainland South which forms part of Mombasa Town. Problems such as unemployment, lack of employment opportunities, development control, poor housing conditions, lack of land and infrastructure, are prevalent in the study area.

In order to find solutions to these problems, the histrorical development of the town was recapitulated, previous plans relevant to the study area and the development control measures as applicable to the study area were examined. Physical, social and economic surveys were conducted by site visits and through the use of questionaires.

The results of the survey, when analysed, indicated that the study area has potential in fishing, farming and in establishment of tourist hotels; in coral stone quarrying, establishment of a cement plant, in creating industries related to harbour development and in building construction. All these factors were considered potential sources of employment.

In order to exploit these resources fully, it is recommended that land should be provided to the people, either as individuals or groups of individuals. Financing opportunities should be made available to improve housing conditions by using local building technology and to promote the utilization of local materials and to buy agricultural inputs like implements, fertilizers and the like. It is also necessary to provide good roads, sewerage, drainage, establish community and commercial centres, improved schools and health facilities.

To facilitate and to co-ordinate efficient provision of the above development measures, a structure plan has been prepared indicating the spatial framework for the short and long term development of Mombasa Mainland South, with a population of 32,000 and 86,000 respectively.

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Introduction

From the planner's point of view, there are three ways in which uncontrolled settlements in urban centres may occur. One of these settlements may start with the in-migration of the people from rural areas or other urban centres. The movement from the rural areas may be either as a result of population pressure hence the land pressure or just a search for employment opportunities.

When such movements take place those who move may have relatives to lodge them when still looking for jobs but where there are no relatives they find themselves with no shelter and hence resort to sleeping on streets. As they continue to stay in the town, they come to know each other and since they cannot continue to stay in the streets for ever, they have to look around for shelter. They fetch broken pieces of wood to put up temporary structures with roof tops covered either by old flattened tins or rusty iron sheeting, or any other natural local roofing material. They look for any available open space which is near places where they think there are prospects of getting jobs and put up their structures haphazardly. When this settlement is not checked by the land owner or by the town authority, it then grows so rapidly. As their search for employment continues, they may, from time to time, get casual employment here and there for their daily bread. When a little income is received from such employment, they begin to modify the structures and increase the accommodation space to provide room for the family.

The other form of uncontrolled settlement may result from the apparent rigidity of the development control e.g. the legislation relating to property ownership, the by-laws e.t.c., apparently because it is possible that there may be lack of manpower to prepare guiding plans for the development or to

supervise the sites when house structures are put up. In other words lack of enough manpower for effective implementation of development plans may also help cause the development of uncontrolled settlements. In that case the developer in most cases may site his building in any available space without considering that the people who will occupy these houses will need other facilities and utilities.

Another form of uncontrolled settlement may occur where the town extends the boundary through the years, it will naturally inherit unplanned rural settlements where the people have been used to building in any available space.

Mombasa Mainland South which is being studied is to the south of Mombasa Municipality. The Municipality is divided into Mombasa Island, Mombasa Mainland West, Mombasa Mainland North and Mombasa Mainland South. Most of the activities are concentrated on Mombasa Island which is connected to the Mainlands to the west at Makupa and Kipevu Causeway, to the north by Nyali Bridge and to the South through vehicular and pedestrian ferry at Likoni and pedestrian ferry at Mtongwe.

The area under study embraces all the characteristics of the uncontrolled settlements discussed above - that is - there are in-migrants who naturally require shelter however crude, there are indigenous people who settled there in their own style and the area has experienced extension of the boundary and naturally apparent rigidity of the development control is felt.

Problems are bound to be present in any settlement and this study area is no exception. Unemployment is known to exist all over the country and with it goes the lack of employment opportunities. As will be shown in chapter one the town boundary was extended in 1959 and that means the added area shows rural characteristics although even the area within the old boundary has rural characteristics. As expected in rural areas the people have fixed in their minds that their area lacks employment opportunities.

The housing condition is poor and only those with regular employment can afford to improve their houses. Scarcity of land is one of those problems that has given rise to the uncontrolled settlement because the developers fear to put up permanent structures just in case the landlords may want their land back or the Municipal Authority may pull the building down for non-conformity with the by-laws. Finally there is lack of infrastructure which cannot be provided at random to serve scattered dwellings because then the expenses would be high unless those being served are prepared to pay for the services.

Having identified the problems in the area, the following objectives were formulated :

1. to conserve the indigenous housing and improve their conditions where necessary through the advice of the building inspectors;
2. to create employment opportunities;
3. to provide market and cultural centres;
4. to provide roads of access, water, drainage, sewerage, power and lighting;
5. to provide additional schools and health centres.

Having identified the problems of the study area and having formulated the objectives, further investigation of physical, social and economic indicators of the area is made with a view to preparing a physical plan to guide and direct the use of the physical space.

A similar study (Mombasa Mainland North - Project Report 3) by the Planning Department of the University in 1973 indicated that of the economically active age population fewer people were in employment as compared to those living in Mombasa Mainland South. The Project Report 3 considered the economically active ages between 15 and 60 years while for the study area ages were taken as between 15 and 59 years. The former study took a population sample of 3% while the latter 6.5%. This

does not form a good comparison besides it cannot be said that in either case the percentages were representative; but it would appear that there are more unemployed people in Mombasa Mainland North than South. The percentages of the employed being 42 for the Mainland North and 46 for the Mainland South and yet Mombasa Mainland North has a big cement factory and a series of beach hotels which one would expect to alleviate unemployment.

The Project Report 3 has however indicated that the Mainland North could only provide work for 14% of the economically active population compared to 33.1% for the Mainland South. The Report failed to indicate employment opportunities in other parts of the town other than Mombasa Island. It cannot be true that 86% of the people work in Mombasa Island and none in Mainland West or South or even outside the town. The Report goes on to say that small scale industries could establish contact with the people only when located along the main roads. This cannot be true because repair shops would equally establish contact if located within residential neighbourhoods or close to them provided there is good access to them.

Relatively, the housing conditions in physical appearance and location in Mombasa Mainland South is better than those in either Mombasa Mainland North or West as revealed by Project Report 3 and Mbarine's study on "Redevelopment of the Port Reitz Area - Mombasa[1]. From the point of view of occupancy rate, if this is an indicator to housing conditions when considering overcrowding, Port Reitz area is assumed to be 2.5 people per habitable room by the author and that of Mainland North from the Report is 3.6 while that of the study area is 1.8.

Land ownership is not indicated in the Project Report 3 but as indicated in Mbarine's study and for Mombasa in general, freehold land ownership by a few individuals some of whom are absentee landlords, has encouraged uncontrolled housing development since most of the building structures are put up on temporary

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1/ K.N. Mbarine - Diploma Thesis - Chapter on housing Page 19.

leases granted by the landlords or their appointees. However, while lack of land to the developers is significant, it is also appreciated that even if most of that freehold land is acquired, without any guiding plans for the siting of these houses, the uncontrolled settlement will continue. Hence any form of demolition carried out by the council is bound to meet opposition from the people whose settlements are to be demolished. The few landlords are capitalising on this weakness.

The infrastructure is lacking in all the Mainland Areas. This is revealed in the study area as well as in Project Report 3 and in Mbarine's study. The surface drainage is non-existent on roads so are the inadequacies in schools, health centres and social halls. There are no sewerage system and the water distribution has been based on individual requests in which case the kiosks from which most of the people draw their water are not strategically located.

As mentioned earlier, the study set out to prepare a physical development plan for the uncontrolled settlements at Mombasa Mainland South. The existing plans which purport to have covered the study area, namely the Mombasa Master Plan 1962 the Mombasa Draft Physical Development Plan 1971 both prepared by the Town Planning Department of the Ministry of Lands and Settlement, and the Mombasa Draft Transportation Study Report 1973 prepared by a team of consultants were examined in so far as their relevance to the study area. Site visits were made and the physical constraints were noted. A meeting was also organized with the elders of the study area to try to know what facilities and utilities they lacked, where they wanted them and which ones had priority.

Under the physical base the following indicators were examined : soils and geology, to know their potentiality for development e.g. in agriculture, housing e.t.c., the effect of climate and prevailing winds and any constraints including the land ownership and policies.

Questionaires were drawn out to give information on the conditions of housing, the infrastructure, on employment and incomes of individuals, where they worked, what means of transport they used, on land and house ownership, on quarry industry, market and large farm production. Sample forms of these questionaires can be found in the appendices.

For the household, building and locations, and tenure and utilities surveys, the study area was divided into seven locations the boundaries which tried to follow the 1969 census boundaries or where this was not possible, a road or track formed the boundary. A total of 493 households were interviewed and at least 68 households were interviewed in each location. Ethnic grouping was also investigated because this could help planners in the design of residential patterns acceptable to those planned for.(Map 7.2)

CHAPTER I

1. Historical Development of Mombasa and Sphere of Influence

Mombasa is the second largest town in Kenya and is East Africa's largest port. It is divided into four parts physically, the Mombasa Island and the Mainlands; North, West and South. It measures approximately 214,000 hactares and the area under study - the Mombasa Mainland South measures approximately 4,800 hactares.

Mombasa is one of the series of ports on the East African Coast used by the Portuguese and Arabs for trade from the fourteenth century. The first settlements were confined to Mombasa Island (Map 1). The Portuguese were particularly not keen in visiting the mainland, neither were they keen in carrying out any development in the town. Their interest was only for their existence to be appreciated. They built Fort Jesus which remains a historical monument to date.

Mombasa upto the first half of sixteenth century had very little infuluence in the immediate hinterland, its orientation was oceanward. The settlement that took place on the Island resembled that of the homelands of the colonizers - narrow,winding streets flanked by solid houses built of coral stone. The doors carved into various shapes and decorated with metals, small windows protected by wooden shutters and well laid floors.

The Omani Arabs captured the town and gripped it firmly from the hands of the Portuguese between sixteenth and eighteenth century and established the Mombasa Old Town but the continued rivalry within the Arab dynasty gave way to the British to move in by late eithteenth century. The British signed a treaty with the Arab Sultan (ruler) who had then moved his headquarters from Mombasa to Zanzibar. In the treaty the Sultan claimed a strip of 10 miles along the Kenya coast. The strip then became a British Protectorate. The British had come in to stop slave trade and also to explore the interior but more so to tap the rich agricultural produce in the northern shores of Lake Victoria in Buganda District in the then Uganda's British Protectorate.

Mombasa Island provided protection against any mainland threats. The inhabitants dug wells which provided fresh water and certain sections of the Island had good soil on which could be grown certain staple crops. Its hard-rock base and coral fringes provided good material for building the walls. The harbour, situated east of the Island, was so sited because there was no difficulty for ships to enter it in terms of obstacles like the prevailing wind directions and current velocities.

Mombasa's prominence increased with the arrival of the steamship. The Mombasa harbour proved shallower for bigger ships and the deep waters of new Kilindini harbour could easily afford bigger ships plus room for extension into Port Reitz area. Administrative quarters were built, bank offices opened, the foreign firms established business in the town and the consumer goods were required in enormous quantities.

The town was developing very fast, increase in the flow of goods, difficulties in handling the bulk of cargo and continuous congestion at Mombasa harbour led to the abandonment of this port in favour of Kilindini. This was in mid 1890s. Now focus of activity was on the western side of Mombasa Island. The construction of the Kenya-Uganda Railway was started and it reached the shores of Lake Victoria by 1901. Nodes were established along the railway, the prominent ones being Nakuru, Nairobi and Voi (Map 2). At Voi a branch served the rich Kilimanjaro region of Tanzania. More Africans began to arrive at the coast as a result of the railway construction. They were attracted with high wages. More Asians arrived to carry on in trade commerce and real estate business. The Arabs found their number was growing less and less compared with the Africans and Asians they were not participating in the development of the town around them. Their interest was centred on the Old Town alone.

Mombasa continues to act as a transit port for the East and Central Africa and soon it will act as a terminus in the proposed Trans-African Highway when it will be linked with Lagos

on the West African Coast, thus making international travel and trade possible in the African Continent.

As far as the study area is concerned, the first settlements was at Likoni and as the town grew the people moved westwards to Mtongwe and southwards to Vumiririani (Map 1).

1.1 Previous Plans

Although there have been four plans prepared for Mombasa namely, the 1926 Town Planning Scheme, the Master Plan 1962, the Mombasa Draft Physical Development Plan 1971 and the Mombasa Draft Transportation Study Report 1973, the first plan was prepared mainly for Mombasa Island and a small part of the area of Mainland North adjoining the Nyali Bridge - Mikomani.

1.1.1. The 1926 Mombasa Town Planning Scheme

In preparing the scheme, two obstacles were at hand so that important streets could not be built namely, most of the land in the new town was privately owned hence specific development could not be carried since it involved acquisition of land at great cost. The second obstacle was that cemeteries and mosques formed barriers.

The centre of gravity of business was naturally to be influenced by port development, new roads to the port, new railway station, industrial and godown development and that means the commercial centre would be midway between the Old Town and Kilindini Port. The business development was naturally going to follow the main arterial roads.

The main provisions of the scheme were pooling and redistribution of land into regular shaped plots, the establishment of road reserves, basic zoning into industrial, commercial and residential areas giving a maximum density of 50 dwellings to the hectare for residential and commercial areas and 25 dwellings to the hectare for industrial areas (a dwelling being defined in this context as accommodation for one family), playgrounds for the people, a central railway station serving the urban requirements of Mombasa as distinct

from a railway station for ocean transit goods and passenger traffic, change of user where the developer requested the change of use of land or building e.g. from residential to commercial use.

Altogether seventeen variation schemes were prepared embracing the provisions. The Old Town was omitted specifically in the Scheme because it was too closely built over. The streets were narrow and crooked and contained many shops and offices in addition to the residential development.

1.1.2 The 1962 Mombasa Master Plan [1]

The 1962 plan showed general physical development for the entire area of the Municipality and gave detailed planning of the Mombasa Island which was experiencing rapid population growth. Particular emphasis was laid on additional housing schemes, additional schools and housing density development in private sectors. The plan was prepared with a view to developing Mombasa gradually within a span of twenty to twenty five years.

In order to make the plan effective it was recommended that by-laws be formulated and adhered to, but that there was room to modify the plan to suit the development trend. The plan recommended that by-laws should not be amended to increase the density ratio.

The plan recommended that owing to the demand for schools and increase in commercial development, it would be necessary to reduce the population of Mombasa Island from 116,000 to 112,000 people or more land would be required to accommodate the people. It recommended that the playing fields for the secondary schools be provided on the mainland areas where land was available.

For traffic problems, the plan proposed ring roads and by-pass roads in order to separate the vehicular traffic from pedestrian traffic. These proposals were based on neighbourhood units designed with houses safe from fast moving traffic, schools large enough to accommodate children of the particular unit, and

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1 Town Planning Committee Minute 311/66

other facilities such as shops and social centres. The plan recommended that mainland areas be developed for residential purpose so as to accommodate the overspill from the Mombasa Island.

The development was not possible based on neighbourhood units because of the rapid growth of population, so a new plan, the Mombasa Draft Physical Development Plan, 1971 was prepared to take these rapid changes into account. In the meantime, the Town Planning Committee approved housing density in Mombasa Island (Minutes 276/71, 798/71 and 933/71) :

1. housing density for residential accommodation be a maximum of 0.5 plot ratio but that Tudor/ Buxton area of the Island be a maximum of 0.75 plot ratio;

2. that residential floor area for the above be exclusive of floor areas/spaces for car ports, garages, fire escapes, common internal staircases and balconies not exceeding 30 square feet.

1.1.3 The 1971 Mombasa Draft Physical Development Plan

The Plan[1] observed that there were two constraints to reckon with when preparing a physical plan for Mombasa : that most of the land was freehold ownership where control over the use of land is less effective thus making the conventional land use zoning difficult unlike other towns in Kenya where most of the land is state owned, the other is the physical geography and its influence in infrastructural growth of the town.

The plan might be considered more as a structure plan rather than a zoning plan. Emphasis was laid on finding the scope and problems of urban development in the town for a population of approximately 1,000,000 by the end of twenty years.

The plan states that the infrastructural planning will depend on the direction of the port expansion. The west mainland expansion would lead to linear expansion of growth along the Mombasa-Nairobi road with the north and south mainlands

1. Mombasa Draft Physical Development Plan. Page 88.

becoming mainly residential/recreational suburbs while the south mainland expansion would make the development triangulated. So until a decision is made on which direction the port will grow, the plans prepared, including the road network, have to be very flexible to accommodate alternatives.

The plan recommends that Port Tudor basin could function as a recreatinn/tourist centre while the Port Reitz basin could be developed for harbour purposes and industrial purposes.

1.1.4 The 1973 Mombasa Draft Transportation Report

The Report produced two alternative transportation models (Map 3) - a centralised and a decentralised model - the former assumed that harbour expansion would be on the northern side of Port Reitz, thus making Mombasa Island and Mainland West areas of better employment opportunities; while the latter assumed that harbour expansion will not only expand on the northern side of Port Reitz but also on the southern side of Port Reitz, thus making equitable distribution of population, working places and services.

The decentralized model is preferred although the cost element is a major drawback for the construction of either the causeway linking Port Reitz Airport with Mtongwe or the bridge linking Mombasa Island with Likoni. Currently physical planning agents are working on a structural plan for Mombasa.

1.2 Legislation and Policies

When the 1926 Mombasa Island Town Planning Scheme was enacted by Government, the Mombasa Municipal Board was constituted and became the Town Planning Authority for the area of the Island, other than the Old Town, and the Mikomani Town Scheme.

Outside the Municipality, the Public Health (Division of Lands) Ordinance 1928 was used as a Planning Act, control being based on the grounds of health, amenity or convenience. There was no control over industrial development and that is why a number of factories sprang along the main Nairobi road frontage from Changamwe to Miritini.

Other legislations which have been used for the use and control of land include : the Town Planning Ordinance 1931, enacted to amend law relating to town planning;
the Land Planning Act 1968, enacted to make provision for planning the use and development of land, it repealed the Public Health (Division of Lands) Ordinance and the Local Government Regulations 1963 which empowered the local authorities to make their by-laws related to planning and general development.
For instance 1)Section 24 of the Town Planning Ordinance states:

> permission of the Commissioner of Lands must be obtained to the division or subdivision of any land within any Municipality or township except in the case of Mombasa where the 1926 Town Planning Scheme applies - such division or subdivision must conform with the provision of an approved Town Planning Scheme and must satisfy the requirement of Township (Private streets) Ordinance. The Commissioner of Lands is empowered (as alternative) to approve a development plan.

2) Section 166 of the Local Government Regulations 1963 empowers local authorities to prepare a scheme. Under the same Regulations, the local authorities have powers to scrutinize any plan whether prepared by the central government agents.

The following extract is an example of a policy formulated under the by-laws. It relates to approval of village layout scheme[1] :

1. that before any new houses are permitted on the plots, the Municipal Engineer visits the sites to ascertain plot bonndaries and number of existing houses;

2. that maximum density be limited to twenty dwelling houses per hectare;

3. the actual siting of the new houses should allow for the necessary alterations which may be required for future general development plan for the area.

Comments

One is tempted to conclude from the historical background and chapter one that the rapid growth of population rendered implementation of the 1962 Master Plan to be done only in part

1 Town Planning Committee Minute 1599/69.

and although the 1971 draft plan was prepared to accommodate any changes in the town which the 1962 plan did not anticipate, unless and until a decision is made on the port expansion, any physical plan prepared will remain hanging and unrealistic.

Approval of temporary village layouts has been suspended since 1973, this means that illegal building structures are definitely going up. Section 3 in the cited example above implies a possibility of uncontrolled settlements being encouraged without realising.

The sooner a decision on port expansion is made and a structural plan for Mombasa is finalised the better.

CHAPTER 2

2. Physical Base

2.1 Geology and Soils

The following four distinct geological formation can be identified (Map 4).

2.1.1. Jurrasic Shale

Jurrasic shale occurs within the incised creeks to the west of the study area and is heavily eroded except where intermingled with deposits of sand. This area is difficult in its terrain and is not suitable for housing development because of the subjectivity of the sub-base movement owing to the moisture content.

2.1.2 Limestone

Limestone occurs in a small patch surrounded by deposits of shale and where intermingled with sand, it support agriculture.

2.1.3 Sands

Two types of sand are identified namely lagoonal sands and magarini sands. The sands carry varying content of clay, are generally fertile and are capable of supporting plantations of coastal crops like coconut, mangoes, cassava e.t.c. The sands, generally, have a good load bearing capacity and housing development is possible.

2.1.4. Coral

The coral rock is usually porous and soft although it shows a diverse characteristic from place to place hence the varying engineering properties. It is a good reserve as far as building materials is concerned. Within two kilometres from the sea, there is almost no top soil and this area supports little vegetation. As one moves inland, the top soil increases in depth and can support subsistence agriculture. The area where this rock occurs is good for housing because of its excellent base.

2.2 Topography and Vegetation

Most of the area is relatively flat (Map 5) rising upto 20 metres above the sea level, but as Port Reitz and Bombo Creeks are approached, the ground rises steeply to just over 60 metres. The approach is dominated by deep valleys which present a constraint in housing development however the terrain is good for landscaping. The coconut and cashew trees dominate the developed scene while scrubs, patches of grass and scattered trees dominate the underdeveloped scene.

2.3 Climate and Prevailing Winds

The climate and prevailing winds in the study area is taken to be basically that of Mombasa town.

The mean air temperature vary between 24°C and 28°C with the minimum being towards the end of July and maximum in mid March. The air temperatures if high usually cause discomfort and so in designing rooms there is need to ventilate roof spaces.

The mean relative humidity throughout the year is generally high, between 70% and 77%, percentage being lowest in January. The humid atmosphere causes bodily discomfort but the prevailing monsoon winds and the off-shore breezes ease the discomfort.

The rainfall is heaviest in the months of April and May between 178 mm and 241mm in a month.The short rains occur in the months of October and November approximately 102 mm in a month, January and February are usually relatively dry. Rainfall can destroy the walls if built of loose material; coupled with humidity, wall designs should be made water resistant.

The direction of the prevailing winds (Map 6) must be taken into account both when siting residential houses and industries. It is important to know that if the spaces between houses are at right angles to the direction of prevailing winds, then much comfort will be felt during hot days. In the case of industries the siting is important especially those which produce noxious gases or dust e.t.c. which polute the air.

For details of the effect of climate on housing designs see "Design for Climate - by C. Hooper of the Housing Research and Development Unit, University of Nairobi, 1975, Chapter 3."

2.4 Barriers and Constraints to Development

There is no permanent connection from either the mainland west or the Mombasa Island. There is ferry connections between the study area and Mombasa Island, one at Likoni which is vehicular and used by pedestrians as well and the other at Mtongwe which is used by pedestrians only.

The admiralty located at Mtongwe is another constraint more so if future harbour development takes place south of Port Reitz. This means room would be needed for industries which use the port facilities.

Land ownership is another constraint (Map 6) especially where the title is freehold because the control over the use of land is less-effective. It is not easy to acquire land except compulsorily for public purpose which is a very long process. This makes legislation another constraint.

Another significant barrier is the coral workings at the South east of the study area.

2.5 Land Ownership

The Government owns approximately 50% of land in the study area, the Municipal Council has an insignificant amount (Map 6). Of the households interviewed only 2.2% had land in the study area. This means that the bulk of the freehold land in the area belong to a few individuals including some absentee landlords who have appointed agents or advocates to administer their land.

Although only a small percentage own land, in terms of housing development, the study area has not lagged behind the rest of the town. In most cases when an individual wants to put up a house, he sees the agents or the landlord whom he

pays an agreed premium and thereafter pays Shs 20/- as ground rent per month. After the premium is paid, he is then shown a site to erect his house, usually of temporary nature. Where the developer is financially well off, he puts up the building and sublets it. The rent is paid according to the condition of the house, the location, the number of rooms occupied and what utilities are in the structure. The rent varies between 20/- and 50/- per month. This type of lease can be extended to such trees like coconuts, cashewnuts e.t.c. as long as the landlord or the agent wants.

This type of house development would appear to reduce the pressure on demand for housing especially for the low income bracket and should be encouraged when an approved development plan is finalised provided the developers conform with the by-laws.

2.6 Land Uses

East of the Mainland South along the beach from the ferry approach is planned residential. It has low density permanent housing and accommodates people of high income bracket. It is well served with water and electricity. Immediately west of this area is the large scale animal and chicken farm.

The uncontrolled settlements occur on both sides of the Mombasa - Tanga road and spread westwards to Mtongwe. The community facilities and utilities are inadequate apart from the shops. These include schools, health centres,markets, community halls, sewerage and drainage.

There is admiralty also located at Mtongwe. South east of the area is characterised by coral workings and western side is mainly open bush and scrubland.

Table 1 and Map 7.1 illustrate the land uses and it can be seen from the table that residential percentage is higher in mainland north (MN) than mainland south (MS). It could be concluded therefore that mainland north is easily accessible than mainland south.

Table 1. Existing Land Uses

Type	MS	MN[1]
	hectares	hectares
Residential	1000	960
Agricultural	397	
Industrial	300	21
Transportation	189	10
Public purpose	140	41
Commercial	5	27
Recreational		109
Vacant land	2769	
Total	4800	1068

Comments

The major problems found in this chapter include the presence of the Admiralty in the study area in case the decision is made to expand the port south of Port Reitz. Port expansion south of Port Reitz seems unlikely because it is the admiralty which is likely to expand. Land ownership is another problem but this could be overcome by changing the policy on land ownership which can only be done by the Government. Larger ferries could improve the delay when travelling between Mombasa Island and the study area because they would take more traffic. Holes left on the quarry ground after extracting the building stones can be afforested and hence will produce timber. The soils are good and small scale agriculture should be encouraged. It appears that there could be employment opportunities through farming or in building industry by exploiting the natural resources.

1 Table 1. Project Report 3 Page 9

CHAPTER 3

3. Social Base

3.1 Population of the Study Area

The 1969 population census of Mombasa District was 247,073 and of this number, 20,998 (approximately 9%) of total) lived in the study area.

Using a growth rate of 3.3%[1] per annum, the 1974 estimate was found to be approximately 27,000 (See table 2)

Table 2. Population Estimates

Year	Total population (3.3% p.a.)
1969	20,998
1970	21,691
1971	22,407
1972	23,146
1973	23,910
1974	24,699

The household size was established from the sample surveyed and this gave a rough indication of the number of households living in the study area. This fact was used to establish the population of the study area more accurately and it was found that there were 24653 people.

The sample population was analysed and compared with the Mombasa District (table 3 and figure 1). It seems that the study area has fewer children under the age of 14 years than the District and this shows why the growth rate is lower than 5.8% per year, a figure suggested by the Ministry of Finance and Economic Planning, for the District.

The sex ratio was approximately 100 males to 77 females and this compared favourably to the District figures which are approximately 150 males to 100 females. The pyramids show

1 Mombasa Draft Transportation Report, 1973, page 18.

similarity of the working age population, 20-34 years, but that the life expectancy of males is higher than females.

Table 3. Population By age and sex

	Study Area		Mombasa District (1969)	
Age	Male	Female	Male	Female
0-4	630	753	18,564	17,418
5-9	1,044	1,245	14,944	14,744
10-14	860	1,398	11,937	9,800
15-19	1,935	1,321	16,233	12,439
20-24	1,874	1,352	17,855	12,565
25-29	1,674	1,674	16,771	10,987
30-34	875	861	24,541	12,417
35-39	1,229	676		
40-44	860	399	12,684	6,505
45-49	1,229	491		
50-54	660	292	5,836	3,353
55-59	230	185		
60+	768	138	4,366	3,140
Total	13,868	10,785	143,731	103,368

3.2 Population Growth and Distribution

Section 3.1 indicated that the growth rate of the population has been virtually constant and this has been confirmed by the survey which revealed that the rate is 3.2% per year approximately. Locations 1, 2, 3 and 5 experienced a growth rate of approximately 10.7% per year, this is found from the fact that the 1969 census gave a population figure of 9,379[1] and the survey gave a figure of 15,544 (table 4).

Table 4. Population Change

Location	Population	
	1969	1974
1		6,200
2	5,382	3,276
3		2,520
5	3,997	3,548
Total	9,379	15,544

1 Mombasa Draft Physical Development Plan, Map 3

3.3. Household Composition

In this section a table is drawn (table 5) to understand household characteristics. A total of 1,605 people were interviewed in 493 households giving an average household size for the study area as 3.3. This figure is lower than that obtained in the north mainland study[1] of 4.3 and that of the District 3.7. Approximately 53% of the households have between 3 and 6 persons.

This table explains why there are few children in the area and it is apparent that there is need to provide single accommodation (17% of total households) for those who probably have got jobs but earn very little money. Theoritically one would expect the children to be educated. The figures also show the need for social facilities based on the composition.

3.4 Literacy

Of the population interviewed i.e. age 5 years and above, 2.0% were found to have had nursery education, 21.6% had primary education, 16.7% had secondary education, 0.5% had higher education, 0.3% had technical education and 0.2 had university education.

Table 5. Household Composition

Household size	Number of households	Percentage
1	85	17.3
2	112	22.8
3	126	25.6
4	68	13.8
5	51	10.3
6	14	2.8
7	12	2.4
8	10	2.0
9	9	1.8
10	4	0.8
11	2	0.4
Total	493	100.0

1 Project Report 3 Page 16

Therefore it means that approximately 58.7% are illiterate. This figure is higher than that found from the survey of north mainland in Project Report 3. There 42.4% of the population were found to be illiterate. Relating this section to section 3.3, while the household size remained low, there was no income to enable parents to pay fees. Now that there is free education for the first four classes parents have to be encouraged to send the children to schools. Steps should also be taken to educate the illiterate, possibly through evening literacy classes.

3.5 Population Structure by Place of Birth

It was important to determine the rural-urban migration and the ethnic composition as this would help the planner to make room for expected in-migrants and possibly to compromise on the residential design. Table 6 reveals that 87% of the population in the study area are from coast province as compared to 75% for mainland north study in Project Report 3. This means, for example, that most house designs and site layouts should reflect the pattern of the life the coast people lead to avoid uncontrolled development.

A research is being conducted on ethnic grouping and residential patterns in Mombasa mainland west.

Table 6. Population Structure by Place of Birth

Place of Birth	% of Migrants	Ethnic Group	Percentage
Mombasa	57.2	Coast Bantu	81.1
Coast Province	30.1	Central Bantu	5.3
Eastern Province	0.2	Western Bantu	4.2
N.E. Province	0.7	Nilotic	2.3
Central Province	2.9	Nilo-hamitic	0.3
Nyanza Pronvince	3.6	Hamitic	0.9
Western Province	1.9	Arabs	3.7
Nairobi Province	1.4	Asian	1.8
Rift Valley Province	0.4	Other	0.4
Outside Kenya	1.5		
No response	0.1		

3.6 Religions

The dominant religion is Islam, 86.7% as revealed by the survey. 0.6% of the people had no religion, 12.3% were christians and 0.4% had traditional religion meaning they had their own way of offering prayers. Since the majority in the study area are muslims, any detailed planning should make provision for mosque sites.

Comments

The problem which needs immediate attention is illiteracy. Population growth is not so much of a problem for the entire area, but is significant in the locations mentioned in the chapter. Action area plans should be prepared for these locations based on an approved structure plan. The fact that there are few children and a small household size could lead to the speculation that majority of the people have settled there recently in search of employment opportunities.

CHAPTER 4

4. Economic Base

4.1 Employment

The economically active age limit deviated from the upper limit of the customary 55 years to 59, because the number of the employed of the age between 55 years and 59 years was significant. The economically active age was therefore taken as between 15 years and 59 years. The following results from the survey are based on the sample taken and are therefore used with caution as it is not possible to verify that they are 100% representative.

The results of the survey when compared with those in the Project Report 3 for mainland north reveal that in mainland north 42% have employment while in mainland south those with employment form 46%. The survey also reveals that of those employed 33% work in the study area while in the case of north mainland of those employed 14% work in mainland north.

These comparisons show that there are prospects of employment opportunities in mainland south although one would have expected mainland north to have better prospects. 30% of the economically active population in the study area were unemployed.

In order to determine employment opportunities, employment was divided by place of work (table 7). Employment was not divided by sector so comparison cannot be made to north mainland study.

The formal sector was divided into industry, business and office, and the percentage employed in each was determined from the sample survey. These percentages are found to be 24.4, 18.0 and 30.8 for industry, business and office respectively.

Table 7. Indication of Employment Opportunities

Place of Work	% of the Employed
Study Area	33.1
Mainland West	8.0
Mainland North	1.9
Mombasa Island	41.6
Sea	3.0
Port	8.0
Outside District	4.4

4.2 Industry

The notable industry is coral stone quarrying at the south east of the study area. Coral blocks constitute an important building resource. Quarrying is done by different proprietors. Two proprietors were visited whose total labour force numbered 108. Payment was made according to the number of stones cut. The quantity varied from 27 to 70 stones per week per person. The number varied according to the skill of individuals and also to the nature of the ground. Compact stone was much faster to cut. Both the proprietors used their own vehicles to transport stones to the customers. Fishing was included under industry.

4.3 Commerce

There is only one established market built by the council about 400 metres from the vehicular ferry. It is a retail market dealing in fruits, vegetables and dried fish. There are 20 stalls only which gives the impression of its size, each stall is hired for 30/- per month. The market is virtually empty for most of the time because the people have not liked where it is located despite being near the main road and not far from the ferry.

Just off the ferry on both sides of the road are 30 temporary stalls which deal in fish, fruits and other small household items like plates, glasses, baskets etc. There were 30 shops doing retail trade. Most of these were located along

the Mombasa-Tanga road. The type of goods they deal with are for the daily needs, including such items like sugar, milk, paraffin, beans, rice e.t.c. There were 5 butcheries, 20 beer shops five of which specialised in local liquor made from sugar-cane or coconut, (Map 7.2).

4.4 Agriculture

Both large scale and small scale farming exist (Map 7.1) The large farm at the time of survey had 55 workers, all except 6 were permanent. The farm measures approximately 384 hectares and in it were 140 cows, 70 heifers, 90 mixed breed 8,900 poultry. The capital investment in the farm was worth £36,400.

Poultry was marketed by the farmer individually while the milk was sold through a cooperative. The farmer intended to increase the poultry and dairy heifers and this expansion he hoped to achieve within a period of two years.

Small scale farming is mainly for vegetables and fruits. In order to determine the desire to grow subsistence in the compound possibly to subsidise on the low income, and the desire to have large compounds for subsistence crops, the study showed that 25% of the household grew some subsistence crops.

4.5 Income

The income categories shown in table 8 had been based on former graduated personal tax assessment and cannot directly be compared to conventional difference of 100/-, however the data can still be used to plan housing for different income groups after all the monthly incomes are never constant at 100/- difference.

Table 8. Income

Shs per month	% of employed
no response	3.5
upto 165	18.2
166-340	18.2
341-500	38.2
501-1,000	17.5
1,001-1,500	2.0
above 1,500	2.4

4.6 Other Activities

Other activities included 7 cobblers, 11 tailors, 2 watch-repairers, 2 bicycle repairers, 2 joiners, 3 tinsmiths all located on the verandahs of the shops. There were 2 laundaries and one vehicle mechanic shop. Two petrol service stations are located on Mombasa-Tanga road.

Comments

Unemployment exists but the study area has a potential in offering employment opportunities especially in the field of agriculture and building industry. Commercial activities is slack as the shops are hardly full of items for every day use may be because the buying capacity of the people is low. Subsistence crops should be encouraged as this helps in subsidising the low incomes. Fishing too should be encouraged.

CHAPTER 5

5. Housing

The condition of houses is thoroughly investigated in the following sections to determine how adequate or inadequate they are, what improvement to be made and what facilities they lack.

5.1 Type of Building Structures

The survey revealed that 13.9% of the housing stock was the permanent type - having stable foundation, 5.1% rural type and 81% Swahili type - both rural and Swahili types are often built using traditional skill and techniques with the natural materials - the Swahili type has a central corridor which opens to the backyard, the corridor usually leads to 4-6 living rooms, at the backyard is located a kitchen, latrine and store. The Swahili housing stock represented 66% of the total (housing stock for Mombasa Housing and Estate Committee Minute No. 1246/69). Of the permanent structure, 1.8% were detached - single family, 7.5% semi-detached - two families, and 4.6% terraced - a row of family units under one roof.

5.2 Built-up Ground Floor Area

The built-up ground floor is so varied that one can conclude that the study area is rural in character. When grouped at intervals of 10 sq metres, the following sizes seem to prevail, the other sizes are nearly equal in percentage. The prevailing sizes are respectively below 50 sq metres 15.8%, 160-169 sq metres 13.2%. The maximum built-up ground floor area was taken as 200 sq metres.

5.3 Building Tenure

It appears from the following deductions that there is little sub-letting. The survey reveals that 51.8% of the households own houses, 18.8% have free housing because they are related to the owners of the houses, 0.6% have free housing because they work for house owners, 4.9% have free housing because they are caretakers, 6.8% pay partial rent because they are friendly to the owners, 16.7% have part of the rent paid by the employer and 0.4% pay full rent.

5.4 Dwelling Units in the Structure, Total Number of Rooms and Number of Habitable Rooms Occupied by the Households

The survey reveals that there are as many as 8 dwelling units in a structure and also that some families occupy as many as 8 rooms in a structure. Most of the families have had one to two habitable rooms (where habitable here means adequate ventilation, water resistant walls and good floor with floor space measuring at least 9 sq metres). There were a total of 1,459 rooms of which 882 were habitable.

5.5 Occupancy Rate

If the sample is assumed to be representative as far as population is concerned then since 1,605 people occupied 882 habitable rooms, an occupancy rate of 1.8 people per habitable room is obtained. If this is true then there is no overcrowding. Occupancy rate thus obtained could possibly be true since the population growth rate is very slow.

5.6 Kitchen Facilities

The survey reveals that 8.8% of the households had no kitchen, 16.6% had kitchen separate but shared, 7.4% had kitchen separate but private, 35.9% had kitchen inside the building but shared and 31.3% had kitchen inside the building but private. It is possible that those households with no kitchen cooked outside the building or had their meals elsewhere.

5.7 Bathroom Facilities

22.4% of households used separate bathrooms, 39.0% shared bathrooms, 38.4% used backyard or compound and 0.2% went to bathe at the sea.

5.8 Age of Building

Only 45% of the households knew how old the structures were, however this percentage give an indication of the trend (table 9).

Table 9. Age of Building

Age (years)	Percentage
0-5	28.5
6-10	32.1
11-15	16.7
21-25	10.9
26-30	3.2
31-35	5.0
36 and above	1.8

5.9 Type of Roof

Because of the readily available coconut leaves (Makuti), most of the roofs are covered by it, 77% of houses surveyed; the material is very good for a hot climate. Other materials used for covering the roofs as a percentage of houses surveyed are : corrugated iron sheets 16.2%, flattened tin 2.3%, concrete 1.6%, grass 1.5%, asbestos sheets 0.8% and tiles 0.6%.

5.10 Ceiling

In a hot climate ceiling is very important as it controls the heat radiation through the roof. The following figures show the aspirations of the people to this end : 46.5% of houses had mud and wattle as ceiling, 17.6% had fibre board as ceiling, 1.6% had mats as ceiling and 34.3% had no ceiling.

5.11 Type of Walls

Majority of houses had their walls built of mud and wattle, 61.7% of the houses surveyed . Other materials used for building the walls were: stones 18.4%, mud/wattle/stone 12.5%, concrete blocks 4.1%, mud brick/blocks 2.1%, cardboard/flattened tin 0.8% and bricks 0.4%.

Of the solid walls, 37.8% were plastered and painted; 35.2% were unplastered and unpainted; 24.8% were plastered and unpainted; and 2.2% were unplastered but painted.

5.12 Type of Floor

The survey revealed that of the floors visited, 44.8% was smooth concrete, 35.6% was earth, 10.5% was rough concrete, 8.1% was earth/stone and 1% was timber.

5.13 Ventilation

The survey revealed that 8.8% of the houses visited had no windows, 53.5% had small windows and 37.7% had adequate windows.

5.14 Wind and Water Penetration

The wind and water penetration was measured by asking the occupants the degree of penetration. The degree of penetration was divided into low, medium and high and percentage of houses experiencing different degrees was determined.

Degree of Penetration	Low	Medium	High
Wind	46.0	48.3	5.7
Water	58.4	21.6	20.0

5.15 Housing Demand and Housing Need

The number of people per household is taken as 3 (derived from section 3.3) and population growth rate upto 1982 is taken as 3.2% per year, this growth rate is taken because it is almost certain that no bridge or causeway will have linked the study area to either Mombasa Island or Mainland west.

The formula used for projection is

$$P = Po\ (1 + \frac{r}{100})^n$$

where Po = Existing population
r = Annual growth rate
n = Number of years from Year Po
P = Population required after n years.

In estimating the housing need and housing demand (table 10), it is assumed that there are 4 rooms per household per structure.

Table 10. Housing demand and Housing need

Year	Population Increase	Houses need	Rooms needed
1974	-	1,971	7,884
1978	3,291	1,097	4,388
1982	7,065	2,355	9,420

The table reveals that there will be high demand for housing unless the 1974 demand is met within this plan period, which is unlikely.

5.16 Housing need and Income

Majority of the people (90%) receive less than 1,000/- per month (see table 8) so they cannot afford to live in high cost housing. It is therefore suggested that those earning upto Shs 340/- per month be accommodated in site and service housing, those earning Shs 341/- - 500/- per month be accommodated in low cost housing and those earning Shs 501/- - 1,500/- per month be accommodated in medium cost housing. Table 11 shows the housing need based on income.

Table 11. Housing Need

Year	total number of houses	site and service	low cost	medium cost
Shortfall	1,971	785	754	432
1978	1,097	437	420	240
1982	2,355	940	900	515

Table 12 gives an indication as how much the buildings cost and table 13 gives the rent paid. The two tables show that most people go in for houses with low rent because the majority of these buildings have low building cost, therefore low rent

Table 12. Cost of Building

Cost of Building (Shs)	Percentage
- 4,999	18.5
5,000 - 9,999	39.3
10,000 - 14,999	29.1
15,000 - 19,999	9.2
20,000 - 24,999	3.4
25,000 - 29,999	-
30,000 and above	0.5

The building costs given by the households could be lower because building owners are known to quote lower figures when submitting building plans to avoid paying higher fees for approving the plan.

CHAPTER 6

6. Community Facilities

There are 5 nursery schools in the study area, one at Likoni, one at Shikadabu and three at Mtongwe; three primary schools, one at Likoni, one at Shikadabu and one at Mtongwe. There is no secondary school in the study area. Other facilities include two social halls and cultural clubs, and three health centres (Map 8).

6.1 Nursery Schools

In all cases, the nursery schools had not been designed as proper nursery schools. The Likoni and Shikadabu nursery schools are run by the Municipal Council and at the time of survey, the children used the community halls as classrooms. These halls have no fixed plot boundaries.

6.1.1 Likoni

Likoni nursery school had 198 children of which 102 were boys and 96 girls with an average age of 4 years, paying monthly fees of 10/-. It had 6 female teachers. The school had piped water and sewage was disposed of by septic tank arrangement. Any refuse was dumped at a nearby pit. Although it had no fixed plot boundary, its compound was adequate as a playground. It had indoor game facilities. It lacked electricity supply, postal services and first aid box.

6.1.2 Shikadabu

Shikadabu nursery school had 29 children of which 17 were boys and 12 girls, the boys' average age was 4 years and the girls, 5 years. It had 2 female teachers. The school fees was 10/- per month and like Likoni, the school received piped water, sewege was disposed of by septic tank arrangement and refuse was dumped at a nearby pit. It had no electricity, no postal services and no first aid box. Its compound was adequate and it had indoor game facilities.

6.1.3. Midodoni

Midodoni nursery school was a private school run in the verandah of a house (Plate 1). It had 21 children of which 5 were boys and 16 girls. The average ages for the boys and girls were 4 years and 5 years respectively. There were 2 female teachers. The school fees was Shs 10/- per month.

Water was bought from a water kiosk nearby and the school spent Shs 7/50 per month (4 gallons cost 25 cents). Sewage disposal was through latrine and refuse disposal by dumping at a pit nearby. Other facilities were lacking. Its location was not ideal as it was so close to the main road and the teachers had to be vigilant constantly.

6.1.4 Mtongwe Naval Base

Mtongwe Naval Base nursery school was initially meant for the children within the Base, but it later extended its services to children from outside the Base. It had 60 children of which 28 were boys and 32 girls with an average age of 5 years. The school had 2 female teachers. The school fees was Shs 30/- per term for civilian children and Shs 25/- per term for children from the Base.

It had piped water, two classrooms but no electricity supply. Sewage disposal was by septic tank and refuse was dumped at a nearby pit. It had postal services though no first aid box. The playground was not adequate. The children receive milk.

6.1.5 Mtongwe Roman Catholic

Mtongwe Roman Catholic nursery school was private. It had 163 children of which 98 were boys and 65 girls. The average ages were 6 years and 5 years for boys and girls respectively. It had 2 teachers, one male and one female. The fees was Shs 21/ per term.

It had one classroom, water cost Shs 10/- per month and was bought from a nearby kiosk. Sewage disposal was by septic tank while refuse was dumped at a nearby pit. It lacked postal services but it had adequate playground.

Conclusions

From the survey it is apparent that utilities were generally lacking. The school compounds needed clear definition. The private nursery school at Midodoni needed fencing for childrens' safety. Outdoor playing facilities were lacking. Since village halls were used by the Council as nursery schools, extension of the halls was necessary. Most of the teachers had refresher courses on nursery teaching from Matuga Training Centre but it is important that all of them should have nursery training education. Average age is 5 years.

6.2 Primary Schools

There are three primary schools run by the Council, two of which are old and established at Likoni and Mtongwe and a new one at Shikadabu. The highest class, at the time of survey, was standard seven for Likoni and Mtongwe and standard two for Shikadabu.

Two other schools in the area are The School for the Blind run by Salvation Army and Likoni Approved School run by the Government. These special schools were not investigated since the Council had no hand in them and their role as far as development of the area is concerned was considered negligible.

6.2.1 Likoni Primary School

The compound of this school measured 2.4 hectares. The school had a total of 1,132 pupils of which the boys' average was 8 years in standard one and 15 years in standard seven. The average age of the girls was 6 years in standard one and 12 years in standard seven.

The number of pupils absorbed in formal scondary schools increased from 17 in 1969 to 24 in 1973 while the number absorbed in technical schools had been constant at 2 during the same period. The school had 25 teachers of whom 18 were trained : 8P1, 6P2, 4P3 and 7 untrained with E.A.C.E. level of education. Standard seven performance was 39% passes in 1969 and 42% in 1973.

The school had no electricity supply but had piped water and used septic tank for sewage disposal. It had postal services and adequate playing ground.

6.2.2 Mtongwe Primary School

The compound of this school was not defined and was not adequate. It had a total of 1,200 pupils. The boys' average age was 7 years in standard one and 14 years in standard seven, and that of the girls was 7 years in standard one and 13 years in standard seven.

The number of pupils absorbed into formal secondary schools increased from 18 in 1969 to 41 in 1973 while the number absorbed into technical schools rose from nil in 1969 to 5 in 1973. The school had teachers of whom 20 were trained: 5P1, 8P2, 7P3 and 6 untrained with E.A.C.E. level of education. Standard seven performance was 60% passes in 1969 and 57% passes in 1973.

The school had piped water, had septic tank for sewage disposal, had postal services but had no electricity supply and had little space for playground.

6.2.3 Shikadabu Primary School

The compound of this school had not been marked and there was no permanent building, the building used was of thatched roof and the walls of mud infill. The highest standard was standard two and there were 250 pupils of which the boys average age was 7 years in standard one and 9 years in standard two, and that of the girls was the same, 7 years in standard one and 9 years in standard two.

The school had 5 teachers of whom 4 were trained : 2P2, 2P3 and one untrained with E.A.C.E. level of education.

The pupils used water from a nearby social hall. Pit latrines were used and other utilities were lacking.

Conclusions

It is apparent a number of pupils do not continue for further studies hence the increase of the number of the unemployed. This is partly because of the level of training of teachers as

reflected from the results from the two schools and partly on the pupils hard work, but the former could be true. Most of the facilities are lacking in the new school at Shikadabu. There is need to re-orient the syllabus to educate the pupils towards technical and agricultural fields so that when they cannot continue for further studies, their meagre knowledge in agricultural and technical fields will be an asset to the people for development purposes.

6.3 Secondary Schools

There is no secondary school in the study area and the pupils travel to Mombasa Island for them. Since the population of the study is above 20,000, a secondary school is justified, and it should be one with technical orientation.

6.4 Health Centres

Three health centres are operated by the Municipal Council and of these only one - Mtongwe Health Centre - is designed as a clinic, the other two at Likoni and Shikadabu are conversions of existing houses.

All the centres had one Medical Assistant, one Midwife, one ungraded Nurse each for Mtongwe and Shikadabu and two ungraded Nurses for Likoni. A doctor visited these centres either in the morning or afternoon. Likoni centre and Mtongwe centre had visits from Family Planning Teams.

The prevalent disease was malaria, but Likoni had influenza and conjunctivitis (eye infection) cases too. The patients came from within the study area and from Kwale District. All the centres were for out patients and the daily attendance varied between 75 and 100 patients.

Mtongwe centre had electricity and water supply. It used septic tank for sewage disposal and refuse was burnt. It lacked postal services and it occupied a site of 1.6 hectares.

Likoni Centre, like Mtongwe, had electricity and water supply. It used septic tank for sewage disposal and refuse was collected by Municipal vehicle. It had a telephone.

Shikadabu centre had no electricity and water was bought in tins from a nearby water kiosk. It used latrines for sewage disposal and refuse was burnt. It had a telephone.

6.5 Social Halls

There was one Social Hall each at Likoni and Shikadabu built by the Council. These were mainly used as day nursery schools but remained unused most of the time after the school hours.

6.6 Maendeleo Groups

These women groups occassionally used the Social Halls for meeting to discuss the progress of different activities they were involved in. They had sowing and literacy classes as well.

6.7 Cultural Clubs

These were small groups, less than twenty people, who met in the evenings to exchange cultural ideas. Soccer talk featured prominently in their meetings.

6.8 Recreation

The soccer lovers used school compounds for playing football after school hours. Although there was plenty of open space, there was no organized recreation areas. There was no public beach like the one at mainland north coast at Bamburi but the beach was accessible.

6.9 Other facilities

Other facilities found in the area included two hotels, Y.W.C.A. hostel, chief's office and a police station.

Comments

Both nursery and primary schools lacked varying degrees of facilities e.g. lack of adequate compound, lack of services like water supply, postal services e.t.c. The training of tea-

chers is emphasised for nursery schools and primary schools as well. Mtongwe health centre should have a telephone installed because this should make it possible to get ambulance service for emergency cases.

A number of primary school pupils seam to be jobless at the end of their seven year studies so efforts should be made to change the syllabus to enable the pupils to participate in development should they be unable to continue with their education.

Programmes, if any, by the Council to re-site the Shikadabu and Likoni Health Centres, and demarcating the schools' compounds, should be accelerated.

There is need to establish a community centre which would provide most of the facilities like, halls, recreation parks, shops etc. which would be more economical than have the facilities scattered throughout the study area.

CHAPTER 7

7. Utilities

The water line in well distributed in the study area (Map 8). It is the other utilities like, sewage, drainage refuse disposal e.t.c. which are lacking. Currently a consultant is conducting a study on the design and provision of sewerage and drainage for the whole Municipal boundary.

7.1 Water

81% of the households used piped water and 19% used water from-bore holes. 27% of those who used bore-hole water boiled it before use. 0.4% had their own bore-holes. The bore-holes were inspected from time to time.

Only 37% of the households interviewed knew how much water they used per day. Of these, 9.5% used below 10 gallons, 15.4% below 20 gallons, 8.3% used below 30 gallons and 4.1% used 30 gallons and above.

The water charge was 5 cents per gallon but where bought from a water seller moving from door to door the cost was 6 cents per gallon. These prices are high and therefore restrict the use of water.

7.2 Sewage Disposal

The topography of the area would appear to make the construction of sewers to be expensive because it is relatively flat but this has to be proved by the consultants. However, from the survey of households, it was found that they used different methods namely : bucket collection 16.8%, pit latrines 24.8%, septic tank 2.7%, backyard or compound 54.2%, unspecified 1.5%.

From the results, it appears that the crudest methods are used for sewage disposal so it is just fitting that a serious study on improving the situation is under way.

7.3 Drainage

There is no organised drainage in the entire area and as in the case of section 7.2, a study is being conducted by a team of consultants to improve it. Individual property owners make open drains to dispose of water. As seen in section 6.4, stagnant water could be a breeding place for mosquitoes which would be responsible for the transmission of malaria.

7.4 Refuse disposal

Refuse collection by Council vehicles is almost non-existent, so the people have their own methods of disposal. 17.1% of the households burried refuse in their plots, 58.7% dumped refuse at any pit nearby, 17.4% dumped refuse in a container at central location and 2.5% used refuse bin collected by the Council vehicles.

7.5 Power and Lighting

Of the households surveyed only one had a private generator. Only 27.6% used power supplied by East African Power and Lighting Company, 2% voluntarily did not use the power.

Monthly electricity cost varied from Shs 10/- to Shs 40/- and above. 2.4% of the power consumers used electricity for cooking. There was little street lighting.

7.6 Posts and Telecommunication

There is one sub-post office which sells stamps and accepts and delivers postal orders. Only 5 households have telephones. Judging by the nature of income, the demand for the telephone would not be great as any financial improvement would be used to improve the conditions of the houses. In fact only 40 people had applied for telephone installation and were waiting. A bigger Post Office would be needed when a district centre is built within the study area then one or two public call boxes could be installed.

Comments

The outstanding problems in this chapter are the lack of proper drainage which has made the water to stagnate thus becoming the breeding ground for mosquitoes, and the lack of proper method of sewage disposal. More than 50% of the households used the backyard for disposing the sewage in the sample, giving an indication of how umpleasant the environment can be. Refuse is not much of a problem and it looks like it is possible to dump it in a selected spot where Council vehicles could then collect it. Although most of the town experiences water shortage from time to time, the study area has not suffered in this regard indicating there is sufficient water.

CHAPTER 8

8. Transportation

The study area is connected to the Island only by Ferry services (plate 2). The Mtongwe Ferry is for pedestrians and cyclists while the Likoni Ferry carry vehicles as well. The delay at the ferry vary between 15 minutes and 1½ hours depending on the queue especially when there are lorries with trailers.

The Ferry services are run by the Kenya Bus SErvices (Mombasa). The Likoni Ferry is used by about 2,000 vehicles on any week-day and pedestrians number exceed 20,000 per day.[1]

There is a trunk road from the Ferry which links Mombasa with Tanga in Tanzania. The other distributors of murram standard are : that off the Ferry ramp, linking the beach plots and the other branching three kilometres from the Ferry linking Mtongwe. The rest of the area is linked by tracks and foot paths of no organised order (see Map 7.1)

The trunk road and the link road between Navy Headquarters and Navy Base are under tarmac.

The people in the study area use different modes for different trip purposes (table 15). Only two trip purposes are considered in this study because they are the most relevant for the study area especially the work trip since it is a determinant in socio-economic activities and reflect on the income. As for the scholars, this study helps to determine the convenience.

Comments

There is need for a structure plan to be adhered to, thus making it possible to do district planning with comprehensive road network including footpaths.

The delay at the Ferry can be improved by introducing larger Ferries. The prevalent modes of travel preferred are by bicycle and by bus.

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1 Mombasa Draft Transportation Report, 1973 Page 61

Table 15. Mode of travel and Person Trips by Trip Purpose

Mode of travel	Person Trips by trip purpose			
	Work	%	School	%
Walk	232	43.1	195	89.5
Bus	83	15.4	21	9.6
Car	37	6.9	2	0.9
Car not own	12	2.2		
Matatu	2	0.4		
Bicycle	130	24.2		
Motorcycle	41	7.6		
Other	1	0.2		

CHAPTER 9

9. Planning Standards

Planning standards are necessary to give guide as to what is desirable although not necessarily affordable depending on the socio-economic system of the society. The standards given in table 16 assume a creteria as to how quickly one can reach such places as schools, health centres e.t.c. by walking. Also examined were the land use standards given in the Project Report 3 by the Department of Planning University of Nairobi and in the Appendices of the Nairobi Urban Study Group Report, 1973.

The following house densities are also assumed on the basis of the distribution of land in the town :

High density 33 houses per hectare - 6 persons/household
Medium density 20 houses per hectare - 5 persons/household
Low density 8 houses per hectare - 4 persons/household

Table 16. Planning Standards

Land Use	Population to be served	Existing hectarage	Proposed Standard (hectares)
Health Centre	20,000	1.8	0.5
Hospital	1.5 bed per 1,000 people (200 beds)	-	
Nursery School	5,000	0.5	0.3
Primary School	5,000	3.0	4.0
Secondary School	20,000	-	5.0
Community Centre	20,000	0.2	0.3
Place of Worship	20,000	1.0	0.1
Commercial	5,000	5.0	1.0
Industrial (service industries)	20,000	-	0.3
Recreation	10,000	-	1.0
Transportation			10% existing land

Based on the standards given in table 16, the following future land requirements in table 17 are estimated. Population growth rate is taken as 3.2% per year for the 1982 estimates, but taken as 5.8% per year (a figure suggested by Ministry of Finance and economic planning for Mombasa) for the 1996 estimates. Plans based on these projections are shown in Model 2.1 and 2.2.

Table 17 Land Requirement

Land Use	1974(Pop 24653) Existing	Land(ha)	1982(Pop 31718) Proposed	Land(ha)	1996(Pop 85233) Proposed	Land(ha)
Health Centres	3	1.8	3	2.7	3	2.7
Hospital	-	-	1	5.0	1	5-10
Nursery schools	5	0.5	6	1.8	17	5.1
Primary schools	3	3.0	6	24	17	68
Secondary schools	-	-	1	5	4	20-25
Community centres	2	0.2	2	0.6	4	1.2
Worship places	7	1.0	7	1.0	10	1.3
Commercial	1	-	6	6.0	17	17.0
Recreation	-	-	3	3.0	8	8.0

CHAPTER 10

10. Towards a Planning Policy for Mombasa Mainland South

The historical background, of the town and hence the study area, is responsible for some of the problems in the areaas to discourage settlement in that a few people grabbed the land and so rendered the indigenous people landless. As seen from the study, freehold land ownership has been a consequence of legislation on land, the title is indefeasible, if need be, the Government should revise its policy and make all land state owned.

Legislation on land needs revision but more so, for the purpose of this study, those which relate to planning so that they are in keeping with the trend of development e.g. the Town Planning Ordinance 1931 and the by-laws made under the 1948 Laws are cases in point. It is important that formulated policies based on the amended legislation should be in conformity with what the legislation says. It is expected that there will be one or two politicians who may bend the law to achieve what they want but these are isolated cases. Through persuations, it should be possible to educate the masses on the benefit the controlled development will bring. So legislation should be there but in an understandable form for the ordinary man. It should also be possible to define, in no uncertain terms, who should prepare and approve development plans as this could make the Government and the local authority planners to clash. It is, however, gratifying to note that revision on the planning law is underway.

Some parts of the study area especially on the western side are difficult topographically and it is suggested that for the time being it should remain reserved.

The soils seem to offer better opportunities for both agriculture and extraction of building materials e.g. coral stones at the south east end. In this way the traditional skills in building technology will also be exploited. The soils can

support rich vegetation especially where sands occur and the trees that thrive include coconuts, cashewnuts e.t.c.

The resource potentiality of the study area and beyond, southwards, is enormous. Its relatively level ground offers good site for setting up industries. Upto now most of the industries in the town are located at west mainland and Mombasa Island. This should be discouraged and instead investors be made to appreciate the potentialities of the study area. Even if there is no permanent link, roads could be built to make accessibility easier and hence there should be no fear in delay when transporting finished or partially finished goods.

At the moment the Government is seriously thinking of setting up a Hotel Complex at Diani for tourism, about 30 kilometres south of the town centre. This complex, together with the existing beach hotels could provide employment for the people.

Other possible industries include establishment of cement factory which would expand in size in the same manor as the existing Bamburi Cement Factory in north mainland, the continued cutting of coral stones for building, the establishment of fishing industry in drying, packing, storing, processing fish and making fish nets and the processing industries for cashewnuts and coconuts, all show employment opportunities in the study area. Where the ground has already been excavated for cement material or quarrying has taken place, then afforestation could act as a substitute resource and with it will be provision of timber mills. Roadside industries like cloth factory are also possible and where the regional primary road reaches the harbour, industries related to port would provide employment.

Basing the argument on the establishment of the Diani Hotel Complex, the cement factory would be located some 12 kilometres south of the town centre so that it forms the base of establishing industrial centre midway between the Hotel Complex at Diani and Mombasa, thus living room for residential accommodation. Other sources of employment will include commercial activities and other light industries.

Rural-Urban migration is not very much felt in the study area, however any planning must take into account that there will be more people coming to live in the area when the north and west mainlands cannot take more people especially when the people will be forced to live away in the interior. They will resourt to the study area for its proximity to the centre of activities by though far transportation-wise, and settlement could be rapid when a bridge is built.

Illiteracy is another problem in the area and this can be overcome by introducing evening literacy classes and expanding school facilities to keep up with the rate of population increase in the area.

It has been shown that the area has a potential for employment so the existing unemployed people should, be encouraged to involve themselves in farming, quarrying and fishing. Those people who are not keen on the building or agricultural sector should be encouraged to participate in commercial trade or in service industries like flour mills, cycle repairs, tinsmith e.t.c.

It has been observed that conditions of the houses are generally not good. The survey revealed that there is a desire to have more rooms hence the acute shortage. Improvement on houses could be done, for example by converting a store to a kitchen or bathroom where none exists. Loan schemes should be encouraged so that the houses themselves become a security.

The Swahili housing type should be encouraged as it uses mostly the local building materials and should be cheaper than any other building built of imported materials. People should be encouraged to have walls plastered for durability and weather reistance and to have large windows and ceilings made of mud and wattle to keep the rooms cool. If there is any intention to put up a housing estate, then site and service housing and low cost housing are recommended.

The survey reveals that generally there is not enough space provided for nursery and primary schoools while two health centres have not been permanently located. The nursery schools have not got adequate playing facilities. Primary school education should be geared towards the pupils' participation in the society after completing standard seven and is not selected for further education. It is observed that very few are absorbed for further education in which case if a chance is not given for repeating the class, or not absorbed in any job in town, the majority become unemployed. There should be at least one secondary school established in the area with emphasis being laid on technical education. The income the people receive in this area indicate that it is unlikely that they can build a Harambee Secondary School.

There is need to have a District centre in the area as this will provide services which are economical if grouped together e.g. shops, community hall, telephone boxes, cinema halls, recreation parks and also will ease congestion of people going for services at the Island because services will be nearer to the people.

Other problems identified include lack of sewerage, drainage and, to a lesser extent, refuse disposal, a study on the lack of these utilities is being conducted by a team of consultants whose recommendations, it is hoped, will be used in improving the situation.

10.1 A Strategy for Development

Before formulating strategies and policies for the overall development, the need to prepare a structure plan for the study area is emphasised as a means of co-ordinating the proposed development programmes.

Two models of physical structure plans have been prepared by Government Physical Planning Department (Model 1.1) and Mombasa Council's Town Planning Section (Model 1.2). Both plans claim to have used the information from the previous development plans

of Mombasa and from Mombasa Transportation Study Report. The only apparent weaknesses in both models are that they ignored the potentiality of the soils for agriculture and quarry industry.

The model 1.1 seems to ignore the presence of the naval base and seems to give so much land for public purposes which is not justified especially based on the standards assumed by the author. No land use is indicated for the area west of the primary distributor. It is apparently based on a by-pass concept which is not justified especially when so much of the surrounding land is expected to remain undeveloped for much of the planning period.

The model 1.2 appears to be logical, it is based on nearly the same standards, it however gives very low density for the area fronting the Kilindini harbour between the regional primary road and the primary road.

The proposed models 2.1 and 2.2 are based on the present study of the area and its potentialities. They accept most of the structure in model 1.2. The transportation network is based on the traffic generation, as far as the proposed Diani Hotel complex, from residential, industrial, commercial and agricultural land uses but takes into account other land uses like public purpose, recreation, open space e.t.c. as well.

Planning standards used in models 1.1 and 1.2 are given in appendix 10.

The structural models 2.1 and 2.2 so suggested should be supported by the following strategies and policies to make them a reality.

1. to encourage informal sector by allowing the people to carry out small trades, repairs, marketing of the foodstuffs e.g. vegetables, fruits e.t.c. by handcarts, since the people working in this sector cannot raise loans to carry out their businesses in the licenced premises;

2. the Government to make provision for loans, through the Council, however little, so that groups can form companies in building and construction industry and be able to exploit the potentiality of local materials by using traditional skills in building technology. Loans should also be made available for fishermen, any cooperatives, and for individuals who do not want to form cooperatives but want to improve conditions of their houses;

3. the Government to make available its vast existing land and where necessary acquire land for such purposes like construction of houses, schools, roads e.t.c. Any fee paid for plots issued to individuals should be minimal;

4. to employ more qualified personnel and supporting staff who will make implementatinn of projects possible;

5. to make provision for roads, street and security lighting in order of priority by asking the councillors from the area where these services are most needed;

6. to provide sewerage and drainage by phasing the programme according to demand;

7. to revise the by-laws so that they are in keeping with the trend of development;

8. the Council to use labour intensive methods for the construction of roads and drains;

9. to change schools' curriculum by laying emphasis on subjects related to trade, industry and agriculture;

10. to decentralise industries thus bringing in some of the industries in the west mainland to the study area.

It is important to note that a decision to expand the port to south mainland would mean more land would be allocated along the harbour for industries, but this decision is also dependent on whether the Admiralty will be removed from the site it occupies now, which is doubtful.

11. Summary and Conclusions

The study identified the major problems as lack of employment opportunities and unemployment, the land ownership and legislation, poor housing conditions and lack of infrastructure. It was found that, if anything, the sewerage and drainage were non-existent and because of poor drainage water stagnated and became a breeding ground for mosquitoes which spread malaria in the area.

There were no good access roads, there was wrong siting of the market hence it was not fully utilised, this means that the people considered themselves as having no market, two health centres needed to be re-sited as they were located in converted living houses. Street lighting was very little because of lack of good access roads. With good accesses more activities would be expected.

The land ownership and legislation could be responsible for the uncontrolled settlement more so because freehold titles are indefeasible and with the developer taking advantage of the policy passed by the Council on Village layouts.

Poor housing conditions was found to exist especially in ventilation and non-weather resistant walls.

Employment opportunities was found to be lacking just because no one has ventured to exploit the resource potential of the area, unemployment was obvious from the survey. In the light of these problems, it is proposed that the study area should be developed as a self-sufficient District both economically and socially by undertaking the following development measures : by giving the people enough land to settle in; by providing health centres, schools, community centre, public utilities; improving transportation; creating a commercial centre; by giving loans to the people to enable them to participate actively in the economic activities e.g. in establishing service industries like cycle repairs, tinsmith, fish net mending e.t.c.; loans for building construction; loans to buy farm inputs like implements, fertilisers e.t.c.; by using labour intensive

methods e.g. in construction of roads; and by amending the legislation to be in keeping with the trend of development. This will help to create a feeling of well being which the proposed development policies aim to fulfill.

In order for the proposed development policies to be implemented effectively, it is considered necessary that further investigations into the alternative implications of the possible extension of the harbour to the South Mainland be undertaken. Such investigations should take account of the presence of the Admiralty and the industrial growth potential in this area.

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MOMBASA MAINLAND SOUTH SURVEY

APPENDIX 1

INDIVIDUAL QUESTIONAIRE

CODE

1: Age (nearest unit number)
Less than ½ year = 0

2: Sex:

1= male, 2= female

3: Level of education:

1= nursery, 2= primary, 3= secondary
4= higher school, 5= technical college,
6= university, 0= no response

4: Occupation:

1= unemployed, 2= industry,
3= business (specify), 4= office,
5= housewife, 6= scholar 7= other (specify)

5: Place of work

1= Mainland South, 2= Mainland West
3= Mainland North, 4= Island, 5= Ocean,
6= Port, 7= other (specify)

6: Distance to work (meters)

1= 0 - 500, 2= 501 - 1000, 3= 1001 - 2000
4= 2001 - 3000, 5= 3001 - 4000
6= 4001 - 5000, 7= 5001 - 6000, 8= above 6001

7: Means of transport

1= walk, 2= bus, 3= car, 4= car not own,
5= matatu, 6= bicycle, 7= motorcycle,
8= other (specify)

8: Income (Shs/month)

1= 0-165, 2= 166-340, 3= 341 - 500,
4= 501 - 1000 5= 1001 - 1500,
6= above 1500, 0= no response

9: Ethnic Group:

1= coast bantu, 2= central bantu,
3= Western bantu, 4= nilotic,
5= Nilohamitic 6= hamitic, 7= arab,
8= asian, 9= other (specify)
0= no response.

CODE

10: Religion:

0= no response, 1= none, 2= indigenous/ tradition, 3= christian, 4= muslim 5= others (specify)

.11: Place of Birth:

1= Mombasa, 2= Coast Province
3= Eastern Province, 4= North Eastern Province
5= Central Province, 6= Nairobi,
7= Rift Valley Province
8= Nyanza Province, 9= Western Province,
10= Outside Kenya, 0= no response.

MOMBASA MAINLAND SOUTH SURVEY

APPENDIX 2

QUESTIONAIRE FOR BUILDING STRUCTURES AND LOCATIONS

CODE

1: Number of dwelling units in structure

2: Built-up ground floor area of structure in sq.m.

Below 50	= 0	50 - 59	= 1
60 -69	= 2	70 - 79	= 3
80 -89	= 4	90 - 99	= 5
100-109	= 6	110 - 119	= 7
120-129	= 8	130 - 139	= 9
140-149	=10	150 - 159	= 11
160-169	=12	170 - 179	= 13
180-189	=14	190 - 199	= 15
200 +	=16		

3: Land tenure for building owners:

1= own, 2= formal lease - private land,
3= formal lease public land, 4= informal lease,
5= uncontrolled.

4: Annual rent of land if known (shs.)
whole number

5: Cost of building if known (shs.)
whole number

upto 4999	= 1
5000 -9999	= 2
10000 -14999	= 3
15000 -19999	= 4
20000 -24999	= 5
25000 -29999	= 6
30000 +	= 7

6: Age of building in years (code 99 if unknown)

7: Type of roof:

1= Makuti, 2= grass 3= flattened tin (scrap),
4= C.I.S. Sheets, 5= asbestos,
6= tiles, 7= concrete (flat),
8= other (specify).

8: Type of walls:

1= card board/flattened tin 2= mud & wattle
3= mud bricks or blocks, 4= concrete blocks,
5= timber, 6= bamboo/sisal,
7= bricks, 8= stone, 9= other (specify)

CODE

9: Wall finish:
1= unplastered, unpainted,
2= unplastered, painted
3= plastered, unpainted,
4= plastered, painted

10: Floor type:

1= earth, 2= rough concrete,
3= smooth concrete, 4= timber
5= tile linol, 6= other (specify)

11: Celling:

1= none, 2= fibre board,
3= mats or cloth, 4= other (specify)

12: Wind penetration of walls:

1= low, 2= medium, 3= high

13: Water penetration of walls:

1= low, 2= medium, 3= high.

14: Ventilation:

1= adequate, 2= small windows,
3= no windows.

15: Have you extended the structure?

1: no, 2= once, 3= twice, 4= more than twice

16: Distance to nearest shop/kiosk/duka in metres.

1	-	99	= 1
100	-	199	= 2
200	-	299	= 3
300	-	399	= 4
400	-	499	= 5
500	-	1 Km	= 6
above	-	1 Km	= 7

17: Distance to nearest market (metres)

1	-	199	= 1
200	-	399	= 2
400	-	599	= 3
600	-	799	= 4
800	-	999	= 5
1000	-	1499	= 6
1500	-	1999	= 7
2000	-	2499	= 8
2.5 Km	+		= 9

CODE

18: Condition of immediate environment:

1= no open space, 2= little open space uncared for, 3= little open space neat, 4= extensive open space

19: Do you grow any subsistence crops on the plot?

1= yes, 2= no.

20: Type of structure-

1= detached (bungalow),
2= semi-detached, 3= terraced/Maisonette
4= flat, 5= hut, 6= Swahili type

21: Type of tenure:

1= own, 2= Free-related to owner,
3= Free-works for owner,
4= Free-guest/caretaker, 5= partial rent-relative/friend of owner, 6= partial rent-employer pays part, 7= full rent.

22: Number of rooms occupied by household:

23: Number of habitable rooms occupied by household.

MOMBASA MAINLAND SOUTH SURVEY — APPENDIX 3

QUESTIONAIRE ON TENURE AND UTILITY SERVICES — CODE

1: Monthly rent, mortgage payment or repayment for house:

1= 0-50 Shs., 2= 51-100 Shs., 3= 101-150 Shs., 4= 151-200 Shs., 5= 201-250 Shs., 6= more than 250 Shs.

2: Electricity supply:

1= no supply, 2= supplied by E.A.P.L., 3= co-operative or communal generator, 4= private generator, 5= not being utilised (voluntary decision).

3: Monthly electricity costs in Shs.

10	-	19	= 1
20	-	29	= 2
30	-	39	= 3
40	+		= 4

4: Source of water:

1= stream or river, 2= well, 3= own borehole, 4= public borehole, 5= pipe borne water on own plot, 6= pipe borne water in house, 7 bought from water seller

5: Has your well been inspected by a health inspector.

1= yes, 2= no.

6: How much water do you use per day? (gallons) If no daily consumption figure available code 999.

1	-	9	= 1
10	-	19	= 2
20	-	29	= 3
30	+		= 4

7: How much do you pay in flat rate per month for water (Shs.)

10	-	19	= 1
20	-	29	= 2
30	-	39	= 3
40	+		= 4

8: How much do you pay for your water per gallons? (cents) CODE

1	- 5	=	1
6	- 10	=	2
11	- 15	=	3
16	+	=	4

9: If you use water from a well, do you boil it before drinking?

1= yes, 2= no.

10: How do you dispose off domestic sewage?

1= bucket collection
2= pit latrine, 3= septic tank,
4= back yard or compound used,
5= other (specify)

11: How do you dispose off refuse?

1= dig it down at own plot,
2= dump it at pit nearby,
3= dump it at communal pit,
4= dump it in container at central location,
5= use refuse bins collected by local authority door to door.

12: How is surface water disposed off?

1= no arrangement (natural),
2= constructed open drain,
3= constructed covered drain.

13: Kitchen facilities:

1= none, 2= separate but shared,
3= separate but private,
4= inside building but shared,
5= inside building but private,

14: What do you use for cooking fuel?
1= firewood, 2= charcoal,
3= gas, 4= kerosene, 5= electricity

15: Bathroom facilities in the house

1= separate bathroom (s) for house,
2= bathroom (s) shared with others,
3= backyard or compound used for bath,
4= other (specify)

16: Do you own land elsewhere?

1= yes, 2= no.

CODE

17: If yes, where?

1= Mainland South, 2= in this district,
3= Central Province, 4= Eastern Province,
5= Rift Valley Province, 6= Coast Province
7= Nyanza Province, 8= Western Province,
9= North Easter Province, 10= outside Kenya.

18: If yes, is it?

1= rural, 2=urban

19: Do you own a house elsewhere?

1= yes, 2= no,

20: If yes, where?

21: If yes, is it? (code as question 17)

1= rural, 2= urban

MOMBASA MAINLAND SOUTH SURVEY

APPENDIX 4

QUESTIONAIRE ON NURSERY SCHOOL

1. Location of School_____Plot No_____

2. Number of Pupils in the School_____

3. Envolment: Boys_____

Girls_____

Average Age

Boys_____

Girls_____

4. Number of Teachers:

Males_____

Females_____

5. Qualification of Teachers_____

6. Nationality of Teachers:

Kenyans_____

Non Kenyans_____

7. Management of School:

Government_____

Municipal_____

Private_____

Self-help_____

8. Fees_____

9. Size of compound_____Acres/Hectares

10. Building:

Number of classrooms_____

School office_____

staff room_____

stores_____

11. Source of Electricity_____

12. Cost of Electricity per month_____

13. Source of Water_____

14. Cost of Water per month_____

15. Sewage disposal:_____

Mains_____

Septic tank_____

latrine_____

bucket_____

16. Refuse Disposal:

Open air_____

pit_____

Collect by Municipal Vehicle_____

17. Postal Services:

Letter box_____

Telephone line_____

18. Health Services:

First aid box_____

19. Church services:

Yes_____

No_____

20. Administrative services:

Clerk_____

Watchman_____

Postman_____

Storeman_____

Others_____

21. Recreational facilities:

Playing ground adequate

No_____Yes_____

Radio_____

Indoor games_____

22. Proposal for expansion_____

MOMBASA MAINLAND SOUTH SURVEY APPENDIX 5

QUESTIONNAIRE ON PRIMARY SCHOOLS

1. Name of School _____

Academic _____

Technical _____

Vocational _____

2. Year of Establishment _____

3. Location of School _____

4. Highest Class in School _____

5. (a) Number of Pupils/Students in School _____

(b) Enrolment per Class:

	Boys	Girls	Average Age Boys	Girls
Class One	____	____	____	____
" Two	____	____	____	____
" Three	____	____	____	____
" Four	____	____	____	____
" Five	____	____	____	____
" Six	____	____	____	____
" Seven	____	____	____	____

(c) Number of Pupils/Students:

From Town/Rural Centre _____

From Outside:

Town/Rural Centre _____

County _____

Elsewhere In Province _____

Outside Province _____

(d) School Examination Class Performance:

Year	No Of Candidates	No. Passed	No. Absorbed In formal Schools	No. Absorbed In Technical School.
1973				
1972				
1971				
1970				
1969				

e) Type of Education Offered:

Formal _____

Technical _____

Vocational _____

6. Teachers:

a) Number _____

b) Qualifications:

i) Trained

	Number		Subject Specificity(at least two teaching subjects)	
	Male	Female	Male	Female
Graduate				
SI				
PI				
P2				
P3				
P4				

ii) Untrained

	Number		Subject specificity(at least two teaching subjects)	
	Male	Female	Male	Female
Graduate				
H.S.C.				
E.A.C.E.				
K.J.S.E.				
C.P.E.				
Other				

c) Nationality of Teachers:

	Kenyan	Expatriates
i) Primary		
ii) Secondary: Up to form four		
Up to form six		

7. Management of School: Government _____

Private _____

Semi-Government(Assisted)_____

8. Fees Charged Per Student/Pupil:

Schools	Fees Charged
a) Primary	_____
b) Secondary	_____
c) Technical	_____
d) Vacational	_____

9. Physical Set Up Of The School:

a) Size of compound:_____Hectares/Acres

b) Buildings: Number of classrooms_____

School office_____

Staff room_____

Library_____

Stores_____

Laboratories: Physical/Chemistry/Biology

_____

Dormitories: Number_____

Number of boarders

Per Domitory_____

Teachers Houses:

Number_____

Type: Permanent_____

Semi-Permanent_____

Temporary_____

Assembly Hall_____

c) Utilities and services:

Utility	Source	Cost
Electricity_____	_____	_____
Water_____	_____	_____

Sewage Disposal: Sewerage_____Septic tanks_____

Refuse Disposal: Open Air_____Pit_____

Services

Postal services: Letter Box_____Telephone Line_____

Health Services: First Aid Box (Siul Bay)_____

Church Services Yes_____No_____

Administrative Services: 1. Clerical_____

2. Bursar_____

3. Watchman_____
4. Postman_____
5. Cooks_____
6. Storemen_____
7. Driver_____
8. Others_____

d) Recreational Facilities:

Playing Grounds_____Radio_____

Indoor Games_____Television_____

e) Agricultural Education:

School Farm _____Acres/Hectares

Agricultural Laboratory: Yes_____No_____

Stores and garages_____

Tractor and other agricultural equipment_____

10. Proposals For Expansion:

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

MOMBASA MAINLAND SOUTH SURVEY APPENDIX 6

QUESTIONAIRE ON HEALTH FACILITIES

1. Location of centre_____Plot No._____
2. Size of Plot_____Acres/Hectares
3. Number of Doctors_____
   Medical Assistant_____
   Midwives_____
   Public Health Inspectors_____
   Family Planning Team_____
   Others_____
4. Out patients:
   Average daily attendance_____
   children_____
   Adults_____
   Average monthly attendance_____
   Children_____
   Adults_____
5. Origin of Patents:
   Local_____
   Outside Mombasa_____
6. Types of cases:
   Prevalent 1._____
   2._____
   3._____
   4._____
   Others 1._____
   2._____
   3._____
   4._____
7. Management: Government_____
   Municipal_____
   Self help_____
   Private _____

8. Proposals for Expansion:

1._____

2._____

3._____

4._____

5._____

9. Source of Electricity_____

10. Cost of Electricity per month_____

11. Source of Water_____

12. Cost of Water per month_____

13. Sewage Disposal:

Mains_____

Septic tanks_____

pit latrines_____

bucket_____

14. Refuse Disposal:

Open air_____

pit_____

Collected by Municipal vehicle_____

15. Postal Services:

Letter box_____

Telephone line_____

16. Administrative Services:

Clerk_____

Watchman_____

Postman_____

Storeman_____

Others_____

MOMBASA MAINLAND SOUTH SURVEY APPENDIX 7

QUESTIONNAIRE FOR FARM PRODUCTION:

1. Size of the farm_____Acres/Hectares:
2. Location of farm: Name of Area_____
3. NUMBER OF WORKERS:

Permanent		Casual	
Males	Female	Male	Female

4. TYPE OF CROPS GROWN:
   a) Cash Crops:

Crop	Acreage	Yield per Acre	Value/year

   b) Subsistence Crops:

Crop	Acreage	Yield per Acre	Value/year

5. STORAGE:
   a) Granneries_____
   b) Bins_____
   c) Others_____
6. TYPES OF ANIMALS AND BIRDS:

Animals/Birds	Total Value
a)	
b)	
c)	
d)	
e)	
f)	

g) _____ _____

h) _____ _____

7. PROCESSING: TYPE OF MATERIAL WHERE PROCESSED

a) _____ _____

b) _____ _____

c) _____ _____

d) _____ _____

e) _____ _____

f) _____ _____

g) _____ _____

h) _____ _____

8. MARKING: MEANS OF TRANSPORT

Means Cost

Through

a) Individual _____ _____ _____£

b) Co-operative _____ _____ _____£

c) Wholesale _____ _____ _____£

d) Distance to nearest market _____ Miles/Km.

9. FARM IMPLEMENTS:

Implement Cost of implement

a) _____ _____

b) _____ _____

c) _____ _____

d) _____ _____

e) _____ _____

f) _____ _____

g) _____ _____

h) _____ _____

10. COST OF WORKERS:

a) Permanent Cost

Number of Workers Cash In kind

_____ _____ Sh/Year _____

b) Casual: Cost

Number Cash In Kind

_____ _____Sh/Year _____

_____ _____ " _____

11. Income: From Crops £_____Shs_____Per Year

From Animals/Birds £_____Sh_____Per Year

12. a) Proposals for the expansion of farm Activities:_____

_____

_____

_____

b) Period of expansion and estimated cost:

Period_____Years. Estimates cost_____£.

MOMBASA MAINLAND SOUTH SURVEY APPENDIX 8

QUESTIONAIRE FOR THE INDUSTRIES:

1) Name of Industry_____

2) Type of Industry_____

a) Organised_____(b) Cottage_____

c) Small Industry_____

3) Location: Industrial Area_____Elsewhere_____

4) Ownership: Sole Proprietor_____

Partnership_____

Limited Co._____

5) Date of establishment_____

6) EMPLOYEES:

Type	Number	Permanent	Casual
Administration	_____	_____	_____
Technical	_____	_____	_____
Skilled	_____	_____	_____
Shemi-Skilled	_____	_____	_____
Unskilled	_____	_____	_____

7) Where employees Come From

	Place	Number
a)	Local_____	_____
b)	County_____	_____
c)	Outside_____	_____

8) Raw Materials Used:

	Item	Source	Quantity/Year	Value
a)	_____	_____	_____	_____
b)	_____	_____	_____	_____
c)	_____	_____	_____	_____
d)	_____	_____	_____	_____
e)	_____ etc.	_____	_____	_____

9) Marketing Of Products Through:

a) Co-Operative_____

b) Individual_____

c) Wholesale_____

10) Electricity Supply_____KW.

11) Water Supply Gallons Per Day_____Source_____Cost__

12. FUEL QUANTITY SOURCE COST

a) Carcoal _____ _____ _____

b) Firewood _____ _____ _____

c) Petrol _____ _____ _____

d) Gas _____ _____ _____

e) Kerosine _____ _____ _____

13. MEANS OF TRANSPORT TO THE FACTORY BY EMPLOYEES COST

a) Bicycles _____ _____

b) Cars _____ _____

c) Buses _____ _____

d) On foot _____ _____

e) Railways _____ _____

14. Locational Factors: _____

_____

_____

_____

_____

15. Problems Of Industry: _____

_____

_____

_____

_____

16.a) Programme Of Expansion _____

_____

_____

_____

_____

b) Reasons For The Expansion Programme: _____

_____

_____

_____

_____

c) Period Of Expansion And Estimated Cost:

Period _____ Years Estimated Cost _____

17. How do you transport finished goods.

18. How much does it cost to transport the goods.

MOMBASA MAINLAND SOUTH SURVEY APPENDIX 9

QUESTIONAIRE ON MARKETS & TRADING CENTRES

1. Name of Market/Trading Centre_____
2. Time of meetings a week_____
3. Type of wholesale/retail.
   1. _____
   2. _____
   3. _____
   4. _____
   5. _____
4. Number of Shops: Whole sale_____
   Retail_____
5. Types of articles:

   Agricultural (perishable and non perishable)
   1. _____
   2. _____
   3. _____
   4. _____
   5. _____
   6. _____
   7. _____
   8. _____
   9. _____
   10. _____
   11. _____
   12. _____

Clothings:

Ready made_____

Tailored _____

Utensils:

All types_____

Specific types (Specify)_____

Other_____

Turnover:

Whole Sale_____Sh/day

Retail_____Sh/Day

PLANNING STANDARDS — APPENDIX TO

Public Purpose	Physical Planning Department	Town Planning Section Mombasa Municipality
District Administration	1.0 ha	not given
Police	1.0-2.5 ha	1.0-2.5 ha
Fire Services	0.2 ha	1.0 ha
Health Centres	0.3-0.5 ha per 20,000 people	0.25-0.5 ha per 20,000 people
Hospitals	5 ha	5 ha
Community Centre	0.5 - 1.0 ha per 20,000 people	0.25 per 20,000 people
Libraries	0.3 ha per 80,000 people	not given
Cultural Centre	2.0-3.0 ha	not given
Nursery School	0.3-0.4 ha per 5,000 people	0.15-0.25 ha per 5,000 people
Primary School	1.8-2.0 ha	1.2-3.5 ha
Recreation	0.5-0.8 ha per 5,000 people	not given

Improved Swahili House

A farm at mtongwe

Plate 1 : Midodoni Nursery School

Plate 2 : Likoni Ferry