

THE USE AND MANAGEMENT OF OPEN SPACES
IN LOW INCOME RESIDENTIAL NEIGHBOURHOODS IN NAIROBI

BY

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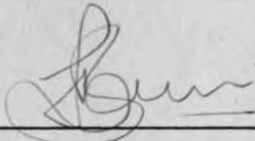
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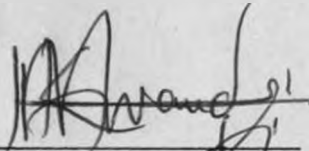
DECLARATION

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



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This thesis has been submitted for examination with my approval as University Supervisor.



MR. I.K. MWANGI
(Supervisor)

DEDICATION:

TO OUR SON KENNEDY MUNENE KARIUKI

As a source of Inspiration.

ABSTRACT

Provision of open spaces in Kenya's urban areas especially in Nairobi has tended to be a matter of standards provided in Town Planning guidelines. There is very little response to changes in people's socio-economic and political lives, which constantly shape and influence the level of use and participation in recreation. This trend has worked to downplay the main objectives of open space provision in neighbourhood planning spearheaded by the 19th Century Town Planning movement.

As key elements in neighbourhood planning, open spaces were seen by early town planners as forums and means through, which community life develops. This expectation cannot be realized in Nairobi where the planners and residents perceive urban open spaces differently, thus presenting a conflict between the expectations of the users (residents) and those of the planners.

To put the study into perspective, three residential estates (Bahati, Uhuru and Umoja II), all developed at different periods of Nairobi's urban development have been studied. The estates are located within Nairobi's Eastlands, a predominantly low income housing region but showing significant heterogeneity in levels of open

space provision and use. The study thus focused on the level of community participation in planning and management of open spaces.

The study is handy at this period as more high density residential development continue to be put up in Nairobi's Eastlands. Developers and City Authority could avoid a repetition of the current situation by taking note of the discussions and recommendations presented in this work.

A number of salient factors which directly or indirectly influence the use and management of open spaces in the study areas were brought out. Among them is the tenure of occupancy of the dwelling units, income levels and employment patterns, site planning in residential scheme development, domestic solid waste management and implementation of landscape policies by the Nairobi City Authority. A significant management problem was found to emanate from the institutional bottlenecks within the City's Local Authority administrative structure.

The study upholds the fact that recreation and other related activities are subject to the changing value system of the users overtime, and the planners task is to keep ablest with these changes.

This approach therefore, calls for responsive urban planning, which is flexible in keeping pace with the emerging urban challenges.

In the light of the above views, the study has provided a number of recommendations intended to improve on the current situation of open spaces. These include; provision for a neighbourhood enterprise area (jua-kali) in the initial stages of residential plan formulation to cater for the unemployed and underemployed members of the neighbourhood. It is also recommended that City Authorities devise methods which can facilitate multiple use of open spaces, especially the school play fields. On the other hand, institutional bottlenecks with regard to management of open spaces should be removed by allowing for consultation and co-ordination of duties between the relevant departments. This particularly applies to the implementation of landscape policy guidelines and domestic solid waste management.

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CHAPTER ONE

INTRODUCTION

1.0 The Urban Dynamics and Modern Town Planning

For the past two decades, urban population in Kenya has grown tremendously within a range of $6\frac{1}{2}$ to $7\frac{1}{2}$ per cent per annum. Since 1962, the total share of urban population has increased from 7.8% to over 16% in 1987 (Obudho, 1989). A great proportion of this urban growth is accounted for by rural-urban migration as opposed to natural increase. This rural-urban exodus indicates a significant shift from subsistence based economy to industrial and surplus based economy. Consequently this population drift introduces into the urban environment groups of people whose settlement background had not prepared them psychologically for an urban way of life.

On the other hand, the high rates of urban growth, continues to add strain on the basic services and facilities in urban areas. Consequently, most inhabitants in the Kenyan towns live and work within built environments they are not psychologically prepared for (Njuguna, 1984).

Among these challenges are high population densities, environmental pollution and other problems related to urban physical development. A common feature in these problems is the interrelatedness in their effects. High densities for instance, have been associated with psychological stress, and when these are translated into human activities, they lead to hostility and even open conflict among urban residents (Ekistics, 1975).

Open space provision is one way of creating a favourable environment through which some of these effects could be reduced. From a natural environment point of view, they provide a medium through which urban residents could interact with nature. However, cities and the administrators often fail in facilitating the achievement of these goals. They tend to neglect these grand recreational spaces.

In Kenya for example, Nairobi local planning authority under the former City Council, found open spaces a waste of land and an irrelevant aspect to be considered in city planning. According to the Council, open spaces did not generate revenue while their maintenance require a budget every year (Maina, 1982).

Due to lack of commitment to open spaces on the part of the city administrators, private developers have resorted to provide open spaces in a haphazard manner. Grootenhuise (1983) refers to such open spaces as "left over" bits of land.

Historically, open spaces in the evolution of town planning goes back to the days of Sir Ebenezer Howard (1902) and his followers. Following Howard's ideas, emerged the Garden City movement in 1930's which coincided with the neighbourhood unit concept, introduced to planning by Clarence Perry, 1929.

The main objective of the Garden City Movement was to achieve a balance of country side and town conditions in the urban environment. Howard's ideas appeared first in 1898 in his book "Tomorrow, a Peaceful Path to Real Reform" and latter republished in 1902 under the title "Garden Cities of Tomorrow".

As a social reformer, Howard was initially dissatisfied with the living environment of most urban workers, especially the industrial workers whose employers (industrialists) had concentrated them in the so called industrial estate, a housing environment which was very injurious to health. These houses provided by the industrialists lacked basic facilities for ventilation and Privacy, thus undermining the moral and social status of the tenants.

To put his ideas into practice, Howard used the design expertise of Unwin and Berry Parker to design the first garden city; Letchworth, some 56km north of London. The results of the experiment were successful from a financial point of view (Goss, 1965).

The garden city principles which incorporated open spaces as component in urban plans were later used in towns such as Welwyn, some years later and Milton Keynes, 30 years later. The plans displayed City areas with space and belts of trees. The guiding planning and implementation principle was to accommodate future recreational options and changes. This was expected to make the citizens respond to their environment, rather than be restricted by it (Sweden: 1972).

However, one of the major elements the plan failed to address comprehensively was in relation to the maintenance and spatial organisation of the enormous open spaces that were provided for. This factor alone is noted to have rendered the plan unimplementable. With Milton Keynes Plan however, there was introduced a very crucial element in open space planning, namely the maintenance and spatial organisation of open spaces in urban areas as well as changing circumstances of the society.

In Milton Keynes, the open spaces were designed so as to cope with changes in attitude, tastes, norms leisure patterns and the value system of the users. These factors, with time, shape and influence the manner in which open spaces are utilized (Symour:449).

Recent observations made by researchers like Symour (ibid.) among affluent societies in Britain and America, regarding utilization of open spaces, established that a large proportion of low income earners in these countries are no longer attracted to public recreational facilities. Instead, they have developed alternative leisure patterns which are no longer in tune with the initial functions these facilities were planned for, ^{such as} golf, swimming, tennis, jogging, mountain climbing and other forms of passive recreation which entails intermingling with nature in its purest form in the countryside.

These findings were further confirmed by a Colloquim in Sweden (1972) which concluded that towns developed under the garden city principles and whose residents were middle and high income earners, had their open spaces properly utilized. Therefore, Tapiola Garden City in Finland was considered a successful experiement because most of the residents fell within these income categories.

Provision of open space planning in residential areas was first synthesized and presented by Clarence Perry (1916) in a planning competition at Chicago in the U.S. Perry used the "neighbourhood Unit" for the first time. The neighbourhood unit concept was based on the planning of residential schemes whereby arrangement of housing units was to focus on family life in a community. The scheme was meant to integrate both the dwelling units and their environment. The 'environment' in this context embraced all the public facilities and conditions required for a family to live in comfort as well as proper development within the vicinity of its dwelling unit (Wheaton, 1966). Perry was therefore, finally able to establish a working definition of a neighbourhood unit as a residential area which should provide:

"..... population for which the elementary school is ordinarily required, its actual area depending on its population density ... (and) should be bounded on all sides by arterial streets, sufficiently wide to facilitate by passing instead of penetration by through traffic (should include) a system of small parks and recreational school and other institutions having service spheres. Coinciding with the limits of the units, should be suitably grouped about a central point One or more shopping districts should be laid out in the conference of the unit (and) the unit should be provided with special street system being designed to facilitate circulation within the unit and to discourage its use by through traffic (ibid: 94).

In Kenya, it is now about 40 years since the neighbourhood concept was officially introduced as a planning strategy through the Nairobi Master Plan (White, 1948). According to White, the neighbourhood unit concept had three advantages;

- (i) To prevent the urban sprawl and ribbon development in Nairobi
- (ii) To encourage healthy growth of community spirit
- (iii) To allow for high level of adaptability in the selection of applicable objectives by the planners.

White's suggestions was that the concept be applied in Nairobi with some modifications, in which the primary school, for instance, needed not define the community focus, since a school in the African context does not define a neighbourhood unit with the clarity it does in Britain (White, 1948).

Hence, by independence time 1963, the outcome of neighbourhood unit planning were disastrous. Firstly the colonial government had all along, having suggested such modifications failed to provide neighbourhood units in Nairobi with basic services such as house lighting, and individual sanitation facilities. Also, the units were rigidly planned to accommodate future growth. This limitation led to overcrowding, crime and

strain on health facilities.

The negative experiences of the Master Plan led planners into adopting the concept wholesale in planning (after 1963) without any modifications. Masiga (1975) observes that the concept today is under heavy criticisms especially from sociologists like Broady (1968) and Vagale (1973), who feel that the concept is founded on dubious notions of social theory (Masiga 1975).

The colonial administrators had adopted the concept to achieve their own ends which was basically to provide African Urban workers with shelter in order to realise greater efficiency and productivity. Consequently, there was little concern paid on the environmental aspects of African housing as decision to locate their residential estate were in favour of Eastlands, a region characterized by great depths of black cotton soil (1 meter), poor drainage, foul smell and noise from adjacent industrial area and railway line (refer to section 3.1).

However, the concept today is a major constituent in Kenya's urban planning for residential areas, because it is considered as taking into account both physical and social aspects of planning in a comprehensive manner. Since the contemporary planners in Kenya have a different objective to achieve in town planning from their

colonial counterparts, they have a special duty of interpreting important elements of the neighbourhood unit which reflect on the present social and economic needs of urban population in Kenya. A success in this could be realized through appropriate knowledge of the value system of the planners and the members of society as the target beneficiaries of the plans.

The current study is focused on the concept and its applicability today in Kenya urban areas, using Nairobi as a study town. To be able to achieve this, the research task is preoccupied with how the concept is likely to sustain some of the basic elements namely, the open spaces, in view of the changing planning priorities, principles and practice on the one hand, and the value system of low income people in Nairobi.

The study has the potential of providing some knowledge to the planners on what social processes to emphasize when providing for open spaces in low income residential areas. This is important in that the benefits of an implemented physical plan are meant to improve the lives of the direct users. Hence, the emphasis should be to increase the advantages of such plan and reduce adverse effects.

1.1 THE STATEMENT OF THE RESEARCH PROBLEM:

The problem of housing in Kenya should not be seen in terms of the shortfall in the number of units provided for the growing urban population only, but also in terms of the total external environment around the dwellings. One of the earliest National Housing Policies in Kenya formulated in 1950's did recognise this factor and noted in part that;

The importance of the official recognition of the neighbourhood unit concept was that the physical planning of the towns would now be concerned with making living conditions pleasant and orderly for Africans as it had in the past for Europeans (Stren, 1970).

This observation demonstrates that the inside of a dwelling should be as good as the outside of it.

Most of the colonial housing estates for Africans were located in Eastlands section of the city of Nairobi which today comparatively stand as low income high density neighbourhoods. Their layouts underscores high levels of openness, for instance, Bahati, Kaloleni, Ofafa Estates are relevant/^{examples}(Figure 6 & 7). According to a survey by Agevi (1989), the minimum dimensions and areas for planned open spaces in Bahati and Ofafa I are 20m x 30m (60m²) and 30m x 40m (1200m²) respectively.

The spatial organisation of the open spaces in these residential estates also indicates a high level of consciousness in design (Figure 8) . In this case, the principle of functional design has been used as the basic determinant of location of open spaces as elements in the plan. This contrasts strongly with the pattern in some recent residential estates like Umoja I, where open spaces, mostly occupy what Maina (1982) and Grootenhuis (1983) refer to as "left over" pieces of land and in some cases, these spaces are completely lacking.

On the other hand, Nairobi City Commission is due to undertake a major redevelopment for some of these old estates in Eastlands. So far, Bahati has been singled out as the most immediate in this move. It remains however unclear what the local authority would do with these grand spaces in Bahati.

Redevelopment may take the form of infills of block houses into the open spaces, demolition of the old units and replacement with new ones or improving the original dwelling units, depending on their current physical condition.

It is therefore noticeable that one of the yardsticks used to ascertain whether an estate is qualified for redevelopment, is a survey of the units with a view of assessing their physical conditions. This

involves an establishment as to whether the roofs are leaking, the walls are falling or the general state of disrepair. This type of survey does not include the assessment of their deficiencies in the environment as with regard to open spaces and their recreation facilities as part of future physical components of redeveloped estate.

Assuming that the benefits of redevelopment would trickle down to the current residents, it is necessary to investigate how the residents are likely to perceive the changed environment; and what issues should be taken into account by the planners in the process of planning and designing of the dwelling units.

The reasons for low regard of open spaces during the initial redevelopment planning considerations are not very clear. However, it could be a reflection of some conflict between the priorities and values of planners as opposed to those of the residents or the population to be housed in the scheme. In justifying the redevelopment proposal, city planners used the economic potentials of such an undertaking given that Bahati estate lies on a very prime land whose values are too high for the current type of housing. The planners maintained that when serviced land becomes scarce, it is only logical for the government to build more houses so as to fill in the open spaces within these

neighbourhoods (N.C.C. 1989). It is therefore clear that social and environmental implications of redevelopment have not been taken in to justify such a proposal.

Conversely, even when provision of adequate open spaces has been catered for by planners during the planning stage, these recreational open spaces are eventually, in most cases unused, and where they are used, the user activities are in form of dumping of domestic solid waste.

In such circumstances, it is not easy to establish whether the planner has failed to deliver his services or not, since planning and implementation is a simultaneous process.

The study therefore reflects on the current debates in the planning profession regarding the provision, management and spatial organisation of all types of open spaces in residential neighbourhood, Maina (1982), Masiga (1975), Mwaniki (1977). To achieve this, the study focuses on three low income housing estates, selected for detailed survey. These estates were planned and developed in different historical periods of urban development for the City of Nairobi. Consequently, the variation in the time of development is reflected on the level of provision and spatial organisation of open spaces in the respective residential estates. Similarly variations are also reflected on the manner

in which residents have interpreted and responded to these spaces in terms of their use.

The estates that constitutes the study area are Bahati built in 1951, Uhuru built in 1967 and Umoja II built in 1981. Bahati, the oldest of the three, was developed under the Nairobi Master Plan (1948). The housing units provided rooms for single male African urban workers. The density was set at 320 persons per hectare. In terms of open spaces, Bahati offers public and semi-private open spaces. It is a tenant purchase scheme owned by the city authority.

Uhuru estate was designed as a housing scheme for low income families and with a density of 312 persons to the hectare; but depicts a very deficient neighbourhood layout. The open spaces are in the category of private, public and semi-public. Tenure is of two types. Phase 3 and 4 offers tenant purchase and phases 1 and 2 offers tenant tenure only. Phase 4 is unique in this scheme in that it offers storey houses, built of precast reinforced concrete elements, and with the casting done on site and erected by a mixture of skilled and unskilled labour.

The project was experimental intended to gain experience with the process of building houses on site using African labour and cheap materials for future housing schemes.

Umoja II is a site and service scheme planned for low income earners with a monthly income of less than Kshs. 2,400/- or families within groups 'A' to 'F', according to the government salary scale. The design of the housing units in the scheme is based on two different types of plans, namely Condominium and the Core housing units. The density was set at 163 units to the hectare.

In the final analysis, the study attempts to provide a valuable contribution to the efforts made by planners in neighbourhood planning on the basis of past and contemporary planning practice. In particular, the area of social, economic and environmental issues to consider in the planning of open spaces in low income residential neighbourhoods, specifically in the Eastlands section of the city of Nairobi have been stressed on.

1.2 STUDY OBJECTIVES

The broad objective of the study is to provide a conceptual base on which provision of open spaces in low income residential neighbourhoods may be based on in future, with respect to planning principles and practice, and in relation to the values and preferences of low income earners.

To achieve the above, three specific objectives have been considered:

(a) To find out how different types of open spaces are utilized by the residents. This included frontyards, backyards, foot paths, space between buildings and around public facilities. The information was obtained through household questionnaire interviews and field observations.

(b) To establish the effective ways of making open spaces useful elements in neighbourhood planning in order to improve the quality of their living environment, and to the satisfaction of households in low income housing schemes. Household questionnaires were used to achieve this in that it became possible to obtain answers regarding the preferences of residents and their attitudes.

(c) To establish whether the planned use and management of open spaces in residential areas for low income earners could be realised effectively if community participation is incorporated.

This objective was realised, partly through household questionnaires, in-depth interviews with Estate Officers, Community Officers for the respective estates and Heads of Department in Nairobi City Commission.

1.3 SCOPE AND LIMITS OF THE STUDY

The geographical scope of the study is limited to the residential estates to the east of Nairobi's Central Business District. This area is mainly referred to as Eastlands and three estates, namely, Bahati, Uhuru and Umoja II constitute the sample areas (Figure 5).

Eastlands, as a zone of residential estates is predominantly low income housing but showing heterogeneity in spatial organisation of space and architectural design of housing units which have been built at different periods of city development.

Against this background, the study offers a comparative analysis of utilization and management of open spaces for the three estates. Its conceptual scope is limited to the provision of a comprehensive approach towards planning and management of open spaces in low income estates; of eastlands region.

1.4 JUSTIFICATION OF THE STUDY

There is an apparent conflict between the planners priorities and those of the urban citizen regarding the actual use of open spaces in residential areas in Kenya.

Open space provision is a major planning requirement which benefits residents through air circulation

into the dwellings as well as offering recreational opportunities amongst other functions. Unfortunately most developers view residential open spaces in the light of the financial gains they could obtain if housing structures occupied those sites so as to gain through mortgages or monthly rents from the occupiers.

While the value systems of both the planners and Nairobi citizens are changing constantly (in terms of planning priorities and leisure patterns respectively) no efforts are being made to reconcile the two divergent systems so that the planners expectations could match with those of the citizens. A planner undertakes to provide open spaces for public interest as the area is a common good.

Therefore, in order to articulate the interests of the urban citizens effectively, the planner should understand their needs and desires in planning of open spaces. Apparently, the provision of open spaces in Nairobi's residential estates is however considered as a matter of standards which are devoid of functional aspects of the facility provided for.

It is the view of the author that this gap could be narrowed if attempts were made to investigate why open spaces that were intended for recreation have been turned into dumping sites for garbage, charcoal depots, informal farming, housing extensions and jua-kali

garages.

Past and current trends in planning practice also show a marked departure with regard to the size and form of open spaces in low income residential development in Nairobi. The spacious open spaces in Bahati for instance, have not been duplicated elsewhere in Eastlands. Rather, there has been increase in the number of residential estates but with diminishing size of open spaces in Eastlands as exemplified by Umoja I Estate (Maina, 1982).

As noted in Section 1.3 of this thesis, the three study estates, Bahati, Uhuru and Umoja II represent three planning periods in the development of the Nairobi City. The choice of these estates therefore aimed at putting the study in context so as to appreciate variations in both time and space as regards the value system of both the Nairobi City Planners and the residents. The obvious observation in the three estates is that, while Bahati open space organisation represent conscious efforts in planning and based on a modification of original theme in neighbourhood concept planning, newer residential estates such as Umoja II have treated these open space requirement in this concept as peripheral. Thus, the emphasis has been on form rather than function, while at the same time there has been a preoccupation with standards

which finally provide open spaces as 'left over' pieces of land.

1.5 Study Assumptions

The study was based on four basic assumptions which were held constant regarding the problem under investigation. The four assumptions were:

(a) The planning of residential estates in Nairobi will continue to be influenced by the neighbourhood unit principles where open space for recreational opportunities would be major elements in the plans.

(b) The provision of neighbourhood open spaces when planning low income residential housing estates in Nairobi does not consider the preferences and the varied needs of the household to be housed.

(c) The problems that characterise the use and management of open spaces in residential areas relate strongly to the general planning and management problems experienced by the Nairobi City Commission.

(d) Maintenance of public open spaces in residential estates remains the responsibility of the City Commission.

1.6 Study Hypotheses

Two hypotheses were chosen to guide the course of the study.

(a) Low level provision and management of open spaces in low income residential neighbourhoods is not the cause of the negative attitude towards the use of these facilities on the part of the residents.

This hypothesis is based on survey findings by Agevi (1989) in Ofafa I and Grootenhuis (1983) in Umoja I, where the research findings established that residents viewed open spaces as wasteful means of landuse. The research further found out that the residents wished that such land could be utilized for farming and other direct productive activities such as farming and poultry keeping.

(b) Majority of low income earners in Bahati, Uhuru and Umoja II are not interested in conventional recreational facilities provided for through neighbourhood planning.

This hypothesis is based on observations made by Symour (1977:84) where he states that:

".... a significant percentage of low income families are no longer attracted to rely on public recreation opportunities. Instead they are developing alternative leisure patterns..... (and) it seems like recreation movement is gradually losing its momentum.

1.7 RESEARCH METHODOLOGY

1.7.1 Data Collection:

Due to the variety of data that was to be used in this research, a variety of data collection methods were adopted. First, a review of existing literature on open spaces was made. This facilitated a better understanding of the functions of open spaces. At the same time, some of secondary information and data, were collected with regard to the study problem. It also included collection of physical plans of the respective residential areas from the developers, as in the case of Umoja II and City Commission Forward Planning Section for the other two estates.

Secondly, questionnaire interviews were conducted on selected households, mainly household heads, from which information regarding residents preferences, attitude, actual and desired use of open spaces was obtained. For selection of sample households see Table T

A third source of data entailed in-depth interview with Nairobi City Commission Officers. The Officers were:

- (a) City Planning Officer.
- (b) Estate Officers in charge of the three Estates.
- (c) Community Welfare Officers in charge of the three study estates.

- (d) Director of Social Services and Housing
- (e) The Director of City Inspectorate Department
- (f) The Chief Valuer
- (g) Superintendent of houses
- (h) City Education Officer
- (i) Superintendent of City Cleansing Section in the Department of Public Health.
- (j) The Chief Revenue Officer, and
- (k) The Superintendent of City Parks in the City Engineers Department.

Personal field observation and use of photographic techniques constituted yet another method of collecting primary data and information.

1.7.2 Data Analysis

The data collected was analysed by use of Qualitative methods of analysis. The data obtained consisted of counts for various variables. Therefore, the Chi-Square (χ^2) test of significance of association between the major variables of interest were performed. This was undertaken after the data met the theoretical assumptions under which the use of the Chi-Square is valid (Blalock 1987: 279-325).

The data collected met the assumption, which are as follows:

- (a) The data was in form of frequencies counted in each number of categories.
- (b) The number of the observed frequencies was more than 20.
- (c) The expected frequency under the null hypothesis (H_0) in any cell was more

than five (where the cell frequency was less than five, collapsing of the cell was done).

- (d) The observations were independently drawn. Thus, only data collected from the study estates was subjected to this analysis.

The Chi-square (χ^2) Statistic used in the test is defined in the following manner (Blalock, 1987):

$$\chi^2 = \sum_{i=1}^r \sum_{j=1}^c \frac{(O_{ij} - E_{ij})^2}{E_{ij}}$$

Where: O_{ij} = observed frequency in the i^{th} row of j^{th} column.

E_{ij} = Expected frequency in i^{th} row of j^{th} column under assumptions of null hypothesis (H_0)

$\sum_{i=1}^r$ = row totals

$\sum_{j=1}^c$ = column totals

Lastly, proportions were computed for observations which could not be subjected to Chi-square test.

1.7.3 Sample Design

The three estates selected for study vary according to housing structures and also layouts.

Consequently, different sampling methods for each was used. For Bahati and Umoja II, simple random sampling was used, due to uniformity in housing and layout. For Uhuru, internal differences between the various phases called for Cluster sampling method units. were sampled out according to phases they belonged. This was adopted to take into account the heterogeneity in the estate. Details of sample design are provided in Table I.

However, it is important to note that although Bahati displays a large number of units in the sample design, most of the units are dilapidated and therefore vacated. Therefore, though statistics regarding the number of units in this category is missing, the field survey identified a significant number of vacated units.

Conversely, not the whole of Umoja II was sampled for investigation although elsewhere in the thesis the total number of planned units is given as 4406. For the purpose of this study, only zones 1-3 have been completed and are currently under the management of the City Commission, for provision of services. The rest of the estate is currently under the developers. Infact zone 8 has not yet been developed.

Estate	Total No. of Units	% of $\frac{\text{Sample Population}}$	Criterion of unit selection	No. of units Visited	
Umoja II	1650	32.5%	every 53rd house	31	
Bahati	1966	38.5%	every 63rd house	30	
Uhuru	1490	29.1%	*	31	
	No. of units	% of units in phase No. of Units in Estate	Criterion of unit selection	No. of units visited in each phase.	
	Phase 1	592	39.7%	every 49th house	12
	Phase 2	324	21.7%	Every 40th house	7
	Phase 3	280	18.7%	Every 46th house	6
	Phase 4	294	19.7	Every 49th house	6
Total population		5106			
Sample size		92			
% of sample size		1.8%			

Table 1: Sample Design

Source: Author

*Criterion of unit selection in Uhuru varied according to the different phases which have different housing structures.

Overall, heads of households constituted the sample points. Only one head of household was interviewed from each unit. This took into account the possibility of finding more than one household in a unit, due to subletting and sub-tenancy in some estates. This was a consistent feature in Bahati and Umoja II. A sample size of 92 units was selected for detailed survey given time and financial constraint that confronted the researcher.

1.7.4 Problems and Constraints

During the period that the questionnaires were administered to both household heads and officers of Nairobi City Commission, the researcher encountered several problems. Some of the problems such as administrative and bureaucratic problems, are typical of field based research problems encountered previously in Nairobi. Agevi (1989) for instance mentions that any information which is treated confidential in City Hall, is always denied the researchers under the allegation that such information suffered the 1983 'City Hall Fires'. This leaves the researcher without any alternative to his or her disposal.

Also it was difficult to establish a rapport with most of the residents respondents since the first impression they got about the researcher was that the research was being conducted by one of the City Commission Officer, who could be investigating on aspects such as

level of house rents in the case of rental units, subtenancy or other related anomalies.

This negative response could be partially explained by the fact that city residents seem to be developing apathy on the operations of the city commission, particularly the City 'Askaris'.

As for Bahati, the Forward Planning Section in City Planning and Architecture Department of Nairobi City Commission, had just completed a redevelopment study when the author commenced to undertake the current research. Due to the past experience by households of the estate with the officers of the local authority, with regard to redevelopment study, most estate residents in Bahati appeared to believe that the questionnaire administration was intended to determine the eligible persons for the units to be constructed. Consequently, in the process of administering questionnaires for this study, respondents in Bahati would often deviate from offering appropriate answers. Most of them viewed the study in the perspective as the former City Commission Redevelopment Study.

In Umoja II, most of the tenants, who were the majority, had not stayed in the estate long enough to appreciate social, economic and physical dynamics of the neighbourhood. Some neighbourhood physical

facilities such as the community centre, schools and markets had not been fully constructed or ready for public use. Therefore, questions on public facilities in Umoja II fell short of answers.

The other major problem as regards the administration of household questionnaire was^d technical one. The questionnaire had questions regarding landscaping. The term 'landscaping' could not be easily interpreted in a comprehensive manner for the respondents to have a glapse of what the question intended to measure. However, to solve this problem, terminologies relating to tree planting and genral vegetation were used.

Administration of official questionnaire and the in-depth interviews with officers of Nairobi City Commission was carried out with ease except for the City Inspectorate Department whose Officers were very sensitive and therefore unco-operative in answering questions regarding licensing and demolition of kiosks in the city open spaces. The uneasiness was due to the fact that siting of kiosks in any part within the city is not based on any established set of rules or rationality but rather on instantaneous decisions made by policy makers in the city rather than planning officers.

1.8 OPERATIONAL DEFINITIONS

- Open Spaces:** In this study open spaces mean the system of spaces in residential areas which are commonly used by residents for outdoor activities, pedestrian movement and about houses. They include frontyards, backyards, childrens play areas, parks, footpaths, community facilities and empty greens.
- Neighbourhood Unit:** It donotes a housing area planned deliberately for a given size of population, with well defined boundaries and spatial limits, and consisting in it, some basic social facilities like a school, parks (recreational facilities), shops, thus maintaining an identical community and physical character.
- Redevelopment:** Efforts taken by a planning authority to improve a housing scheme that has outlived its economic potential. The term refers specifically to spatial improvement for better results.
- Landscaping:** Improvement of open spaces for aesthetic reasons in order to make the housing area more attractive for residential purposes by urban citizens.

- Management:** The organisational framework on the part of Nairobi City Commission staff and the residents in efforts towards ensuring that open spaces sustain their planned functions. It entails such aspects as maintenance and making of decisions for programming leisure activities by Nairobi City residents.
- Use of open space:** Various ways in which residents utilize the open spaces within their housing estates.
- Community participation:** The level and manner in which beneficiaries of housing estate are involved in planning and implementation of policies related to open spaces within their estates.
- Condominium:** A Cluster of five or six housing units designed around a common court yard or open space, with water and sanitary facilities (one for each unit) located at one end of the common open space.
- Core-Unit:** A self contained plot with one room (initially), toilet and shower, and which can be developed by the purchaser into a predetermined level of development

through an approved plan.

Solid Waste: (Municipal refuse) This refers to material for which the primary generator or user abandoning the material within an urban area requires no compensation upon abandonment. Removal of such material becomes the task of the local authority concerned. Such material include domestic refuse, soil heaps, demolition and construction debris and institutional waste (solid).

Leisure: Refers to the portion of an individual's time not occupied by employment or in pursuit of assential needs such as domestic duties or religious functions.

Recreation: Any leisure time activity which is persued for its own sake. It could take the form of physical, social cognitive or environmental activity.

**Left Over
Open Spaces:** Open spaces which are incidental in location, and not functional recreational spaces due to size, accessibility and location. Normally these are left by the developer because the land could not have been put to any economic use,

e.g. a housing unit.

Value System: Individual feelings which are expressed in form of sentiments, preferences, attitude and tastes. These consequently influences human behaviour and response to his surrounding environment.

1.9 SUMMARY

In this chapter the urban challenges which point to comprehensive urban planning and particularly the provision of open spaces have been underscored.

The problem of open spaces in Nairobi currently is viewed in terms of the growing divergence between the planners priorities and those of the low income residents. The growing gap is also exemplified in the Nairobi City Commission redevelopment proposal (1989) for Bahati which justifies redevelopment in economic terms as opposed to social and environmental problems in which open spaces are part of.

The three study estates (Bahati, Uhuru and Umoja II) all in Eastlands, represents different planning priorities on the part of City Planners and also Nairobi's development.

The research methodology which involved collection of both primary and secondary information from a wide spectrum of respondents intended to measure both the official (City Officers) and residents priorities and attitude towards provision of open spaces for the low income residents. This data was analyzed qualitatively.

The Chi-square (χ^2) was adopted for hypothesis testing after the data collected met the theoretical justification under which the application of the test is valid.

CHAPTER TWO

THE THEORETICAL JUSTIFICATIONS OF OPEN
SPACE PLANNING IN THE HISTORY OF
MODERN TOWN PLANNING

2.0 The Garden City Planning

The concept of garden city is historically associated with the works of Ebenezer Howard in Britain, who was basically a social reformer. The philosophical underpinnings of garden city planning approach were expounded in Howard's book (ibid. p.3).

According to Howard, the text was a "unique combination of proposals" (Bayley 1974) in which he brought together philanthropic free thinking and socialist ideas in Britain, through organised pressure groups (Garden City Movement). However, the garden city did not appear to him as an architectural concept, although today it has become an architectural problem, for he confessed that:

..... shortly stated, my scheme is a combination of three distinct projects which have, I think never been limited before. These are (1) The proposals for an organised migratory movement of populations.

..... (2) The system of land tenure first proposed by Thos Spencer and afterwards by Herbert Spencer and (3) The model of city of James Silk Buckingham (Howard p. 119).

From Howard's statement, it is clear that garden city movement had two types of utopia, imaginary utopia and real utopia. Bayley (1970) observes that the imaginary utopia is based on the visions earlier made by social reformers in British tradition, particularly the works of Herbert Spencer and Thomas Spencer. The two sought for nationalization of land.

Howard picked and adopted some of the garden city conceptual ideas from these intellectuals. Howard was not an intellectual himself, but as Mumford (1978) notes he could not be held back by those forms of specialized competence. On this basis, Bayley (ibid.) notes that:

This heady idealism of a sort divorced from the clockwork method of socialism was, while not perhaps an inspiration to the nineteenth century manufacturers who, in providing the homes for workers gave the architectural start to the garden city movement, at least provided a basis for the philosophy of the garden city's apologists.

Real utopia on the other hand, is based on the model estates and the garden suburbs of the philanthropic manufacturers (Bayley, ibid.). The developing social and political conditions in the industrialized England, led to emergence of industrialized labourforce, which could not find shelter in the urban areas that were emerging at the time. Consequently, those who sought for shelter with the employers (industrialists) had their

lives at the mercy of the latter.

The textile manufacturers for example in South Yorkshire, were some of the earliest to have created residential communities that were very similar to each other. Such industrial villages were exemplified by Robert Owens (1771 - 1858) industrial community. With villages of 100 to 1500 population at a density of one person to the acre, and where residential buildings layout were in a parallelogram pattern that enclosed a central open space (Bayley, 1975). These villages were to have provisions for industrial manufacturing and agricultural activities, while at the same time, they would have both working and eating functions accomplished at the same place. Owen was motivated by the feeling that happy workers contribute to economic efficiency. An example of such 19th Century utopia villages were Saltare, Akroyden and Copley (Bayley *ibid*).

It is these developments that led to spectacular growth of new industrial towns in Britain. They were standardised and replicated almost all over the landscape in linear form of urban centres. By late 19th Century, urban development had reached a period where desire to restrict growth of towns within their civic boundaries was inevitable (*ibid.*). This growth, in form of "Urban Sprawl" deprived their urban citizens regular contact with the natural landscape on a large scale (Nicholson, 1987).

The intensity of the problem was felt more in residential areas than elsewhere in the towns. Consequently, there was a strong need to create towns that were scaled to communal life. In the face of these problems, Howard became the most influential of the late Victorian Model of community programmes. He proposed garden cities which were to be self sufficient and carefully planned settlements that combined industry as well as agriculture as an entity (ibid.). The surrounding green belts were to discourage chances of ugly urban expansion at the periphery. Land within the garden city was to be publicly owned, though private enterprises would be allowed to flourish.

Thus, Mumford (1965) identified three basic elements in Howards vision:

- 1) Land owned by the whole city.
- 2) Limited growth and limited population.
- 3) A balance between town and country.

From these elements, the third one appeals a central position in this study. A balance between town and country denotes that urban areas cannot be purely concrete and anonymity, but also some elements of green landscape, social cohesion, and as sense of community development.

Howard's ideas were further supported by the earlier legislative changes in which the municipal corporation

Act of 1835, gave city administrators the power of self government, and thereby giving legal authority to determine internal organisation of cities to the civic representatives of local citizens.

Under this Act, city legislatures began to understand their roles and moral obligations to their citizens. As late as 1966, the poor living conditions of the working class was underscored by Creese (1966) who observed that the situation was showing a danger signal:

..... because we are infringing the laws of health in trying to live where air will not support plants.

At the beginning of the last quarter of 19th Century when Public Health Act was passed, significant provisions were made to legalise slum clearance and to have a housing development to conform with the 'by-law street'. With the enactment of by-law street, it became easier to drain, service as well as provide better ventilation and direct sunlight than could have been possible in the former industrial village open space (enclosed court).

However, the Act had no aesthetic considerations, for although the former open spaces (industrial village courts) were unhygienic, they provided the people within it a pleasing association of enclosure, and community, while the 'by-law street' provided only a dreary monotonous regularity. (The by-law street was

a form of urban development requirement which required houses to open up to a street than to an enclosed open space known as the village court). The most important aspect of the Act in the history of Town Planning is the recognition that legislation could be used to improve urban environmental quality. Though the 'by-law street' and the industrial village court is not reflected in Howard's garden city, ideas related to tree planting in courts and other levels of open spaces, could make it a proto-type of garden city (Nicholson, 1987).

Howard's garden city concept, based on the background of social deprivation, working class misery due to shockingly bad housing, constitute the corner stone of Modern Town Planning over the world today. This is primarily because his ideas and objectives were successfully implemented in two garden cities: Letchworth and Welwyn (Abercrombie, 1910).

The garden cities envisaged by Howard, had residential lots measuring 20 by 30 feet and were deemed enough to feed a family of five and half people (Nicholson 1987). Each garden city was to be separated from the next by two miles of open country, and the six garden cities, together with one central city, constituted the 'social city', with a population of 25,000 people (See figure 1).

Urban planning and implementation based on garden city concept was observed not to have taken the entire problem of the citizens into account (Bayley, 1975).

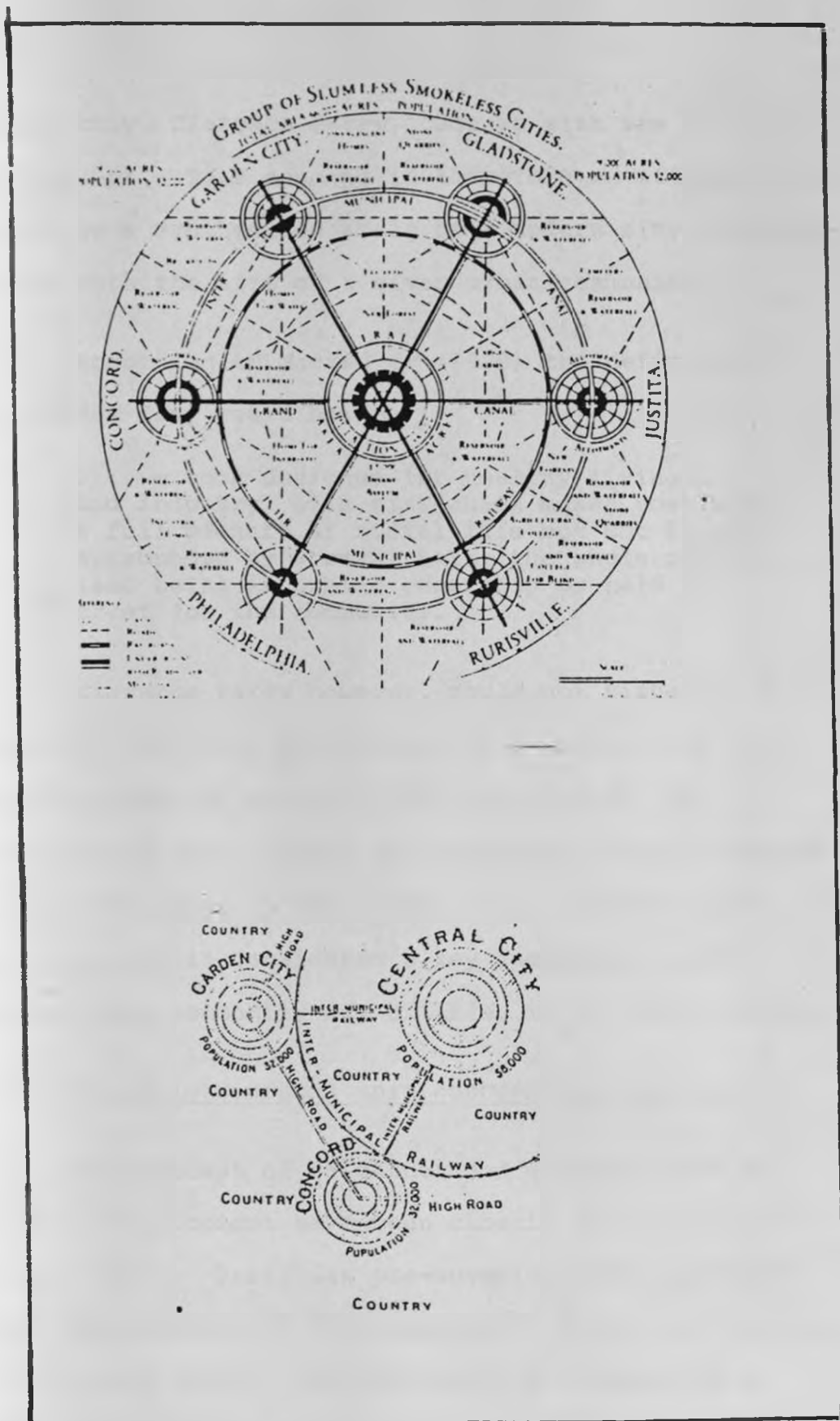


FIGURE 1 : EBENEZER HOWARD'S SOCIAL CITY
Source : Bayley(1975)

Consequently, Clarence Perry, came up with the neighbourhood concept. This concept is therefore an attempt to provide a synthesized scale of a modern city characteristics into the life of a given urban community.

According to Macfadyer (1970) the definition of a Garden City would be:

.... a town designed for healthy living and industry, of a size which makes possible a full measure of social life but not larger, surrounded by a rural belt; the whole of the land being in public ownership or held in trust for the community.

Clarence Perry however, could not visualize how community life would be achieved in a garden city if a community does not exist in the first place. The neighbourhood unit concept was therefore also a response to this deficiency in the Garden City, in which open space planning is considered a key component in the creation of a community way of life, in an urban setting.

2.1 The Neighbourhood unit concept in planning

The concept of neighbourhood unit and that of community development have been closely associated with Clarence Perry. Perry was pre-occupied with the study of the organisation of local communities and institutions in the United States. He particularly focused on a school as the centre of community life.

His interests in the community were first aroused by the government efforts to create community centres

without first recognizing what could create a sense of cohesion in a community. Perry noted that most American cities had grown without prior planning due to immigration into the country by groups of people originating from all the different races in Europe (Dahir 1950).

In 1921, Perry published a pamphlet entitled "Ten years of Community Centre Movement". The thrust of the paper underscored the failures of the community centre movement. Perry felt that the greatest challenge for planners was to incorporate in their urban plans aspects that could facilitate a sense of community. To achieve this, he made use of the attributes of urban plans, especially those that aimed at improving the physical environment. It was therefore possible for Perry to recognise that an increase in facilities that were meant for the improvement of the physical environment became a focus of the community life.

Thus, according to Perry, a neighbourhood unit was:

.... a scheme of arrangement for family life community (Wheaton, 1966).

The scheme would be constituted of the dwellings and their environment. The concept of the 'environment' referred to areas embracing all the public facilities and conditions required for the comfortable and proper development of an average family within the vicinity of the dwelling.

On the basis of the above definition for a neighbourhood unit, Perry came up with the neighbourhood unit, shown in figure 2. The plan emphasised on four main elements. The elementary school as the focus of the neighbourhood; elimination of through traffic in the neighbourhood and alignment of local streets to serve the residents; localised and segregated shopping centre at the intersection of the through streets at the corner of the neighbourhood, and provide minimum standards for open spaces and neighbourhood parks (Wheaton, *ibid.*).

In his outline, Perry perceived the elementary school (an equivalent of a primary school in Nairobi) as the most important element in the neighbourhood planning. The location of this school and the recommended size of land it occupies, defined the physical extent of the neighbourhood. This implied that school children did not have to walk more than $1\frac{1}{2}$ miles (2.4 km) to school. Perry advised for the provision of an elementary school for a population of 1000 to 1200 children and therefore an overall population of between 5000 and 6000 people occupying 160 acres of land for a neighbourhood. Consequently, the densities were to be 10 families to the acre or 10 houses to the acre (Dahir: 1950).

On through traffic, the safety of children with regard to vehicular traffic is taken care of. Children are not to cross a main traffic street on their way to

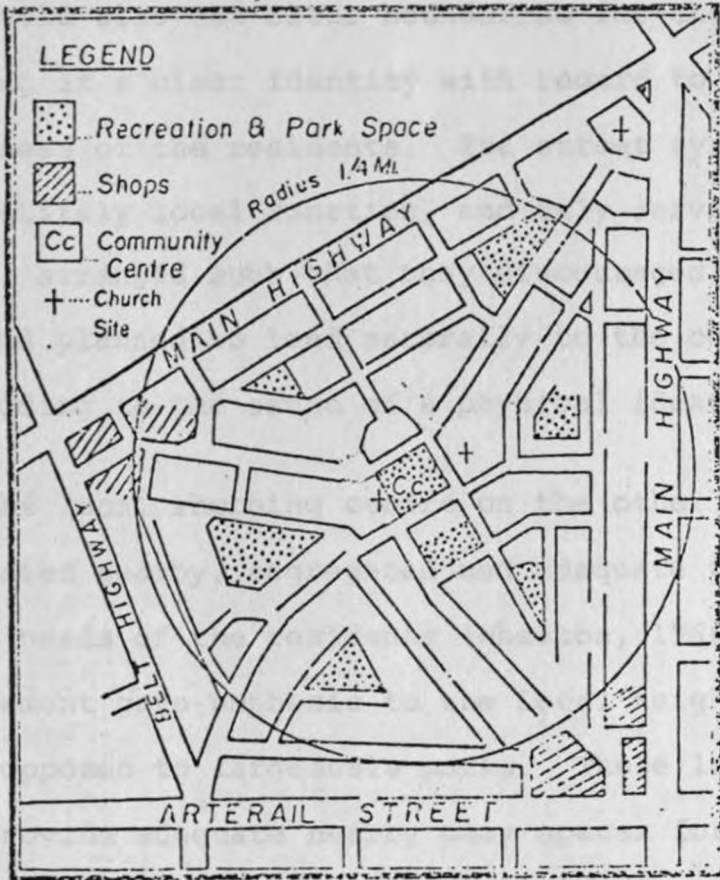


Figure 2 : NEIGHBOURHOOD UNIT PRINCIPLES.

Source: New York Regional Plan Vol. 7

school. Streets of a residential area were organised to exclude through traffic. Secondly the alignment of streets would also set clear boundaries for the unit, thus giving it a clear identity with regard to consciousness of the residents. The street system would have an entirely local function, and only service streets by status, arranged such that they discouraged 'foreign' traffic and planned to lead naturally to the community centre, adding to the sense of a physical identity.

The local shopping centre on the other hand, was to be located nearby, segregated and adequate to meet the daily needs of the residents (Wheaton, 1966). The fourth element gave emphasis to the local neighbourhood parks as opposed to largescale parks. These local parks were to provide adequate nearby play spaces for the neighbourhood children. In Bahati, Uhuru and Umoja II, these local parks are represented by open spaces that are the focus of this study.

Masiga (1978) observes that the standards used for open space provision was a minimum of 10% of the total area, but distributed all over in the neighbourhood.

However, Perry recognised that the manner in which there amenities are utilized and maintained in real life, depends largely upon the locality and sensitivity of residents, their willingness and ability to organise themselves as a community, and on the success of efforts made

to provide them financially.

Sociologists like Vagale however, comment that the applicability of this concept is very limited especially in third world planning context. He gives the reasons for this on the basis that the neighbourhood unit concept is sentimental, reactionally in effect, anti-urban and idealized form of village life (Vagale, 1973). Though Vagale's observations are based on his Nigeria's town planning experience, the same can be said of Kenya's town planning. However, in the latter context, the pressing problem of shelter per se, has consequently shifted the planners' appreciation of the total housing environment. Also, basic to this variation is the constantly changing housing policies, which have, overtime, tended to reflect on the whims of external donors, who constitute the movers of Kenya's housing policies.

Despite these criticisms, it is beyond the scope of this study to establish the validity of the criticisms. The concept however, represents an important effort in Town Planning as regards the importance of community recreational facilities in urban areas. It further underscores the importance of these facilities that include open spaces as communal amenities, but also important as regards the maintenance of the physical environment at both the residential unit and entire urban level.

2.3 The Application of Neighbourhood unit and Open space planning in Nairobi.

The application of the concept was preceded by a policy for housing African labourforce in Nairobi that was focused at improving efficiency and production of this labour, through a policy of progressive improvement of the housing conditions. This policy had been adopted in 1939, but did not enter into operation until 1950's.

The policy provided for the following:

- (a) A requirement that private employers such as the Railway provides housing for their employees.
- (b) A provision of subsidized housing by the then Nairobi Municipal Council.
- (c) Give permission to Africans in Nairobi so as to build their houses by use of temporary materials such as carton papers and scrap metal; and
- (d) The establishment of semi-rural villages on garden city lines. Such villages included residential estates like Kaloleni, Bahati and Ofafa (Stren, 1970).

Serious application of the concept in the planning of residential housing in Nairobi therefore began 40 years ago through the use of a master plan (White, 1949). As indicated elsewhere in this thesis, however, the concept was applied with significant modification, and

"A MASTER PLAN FOR A COLONIAL CITY" that was prepared by Thornton White and adopted in 1949, formed the practical basis for its implementation. As a basis for implementing residential planning in the Eastlands of Nairobi, adoption of the concept was preceded by two important economic and population events. First, by mid 1940's the policies (a), (b), (c) and (d) above, became obsolete in that income levels for African employees in the formal sector were comparatively very low, ranging between Kshs. 20/- to Ksh. 111/- per month. The Europeans lowest monthly earnings was Ksh.400/- (Stren *ibid.*).

The low incomes for Africans meant that they could not meet rental housing obligations effectively, whereas on the other hand, some members of the African family, mostly wives and children were forced to live in rural areas and their husbands in urban areas (*ibid.*).

Secondly, during the war period (World War II) there was rapid population increase in Nairobi from the original 65,000 to 109,000. Consequently, it became necessary to implement racial segregation policies in Nairobi. Therefore, the adoption of modified neighbourhood planning principles for African residential location and their incorporation in the master plan in 1948, became a critical factor to guide implementation of physical development in Eastlands, as from 1950 (Agevi, 1989).

White, with regard to the plan, observes that the strategy offered:

greater adoptability of detail
to meet the specific needs of
various peoples living in various
climates and countries (ibid. 1969).

Thus, according to Agevi, (1989) the following modifications were made when the concept was adopted for application in Nairobi. First, the primary school needed not be the focus of neighbourhood unit. The reasoning was that the school does not define the community with the clarity it does in Africa. Secondly, a neighbourhood unit should serve a smaller population than in Britain. Thirdly, the shopping centre should not be located together with other public facilities, nor at the boundaries of the unit, and finally, a health centre and a social hall should be included (ibid). This is true of Nairobi. In Bahati estate for instance, the shopping centres are at both extreme edges of the estate, making them inaccessible to a majority of people, and far from the community centre.

Planners in Nairobi adopted the approach in Nairobi Eastlands partially because some areas were already built. Where this happened, the planners provided for a main distribution road system to await the economic life of the buildings to expire so as to undertake replanning of such residential areas (e.g. Bahati). At the same time, they recognised that the concept should be applied with care because:

.... a too lateral unsympathetic interpretation of the objectives can quite easily lead to stupid if not disastrous results (White 1949).

2.4 Provisions for Open Space in the Nairobi Master Plan.

Provisions for open space in Nairobi master plan were focused on three areas: The group population for whom recreation was deemed significant, racial factor and the role of open spaces in the urban environment.

Against this background, White (1949) highlighted that outdoor recreation, is an indispensable amenity for urban population, required to match the modern industrial and commercial life. Thus, with regard to recreation facilities in Kenya, he further observed that, the extension of school leaving age, emergence of 'keep fit classes, the international sports movement, pensionable retirements and the emerging world wide holiday movement, are changes that take people into the sphere of life for which "open spaces have to cater".

The plan also considered open spaces as a means for cultural exchange and therefore assisting in reducing the anonymity that existed among the various races. This is underscored in the plan by the observation that:

.... the visitor from a far, wants to know more and so residents should know more dances, the amusement the games, the feats which each race has developed and perfected (White, 1949:54)

According to these planners, open spaces meant more than preservation of tracts of land for vegetation. To them open space planning meant a conscious treatment of that preserved space, its landscaping and utilization for enjoyment.

Provision for sporting land use activities was also considered as an issue in open space planning. Sporting was to facilitate different races to interact and therefore reduce destructive tensions that would build up when human groups lived in ignorance of each other (ibid.:55). Therefore, the plan suggested the Nairobi City Council to focus the use of some of its financial resources to the planning and maintenance of recreational open spaces. Thus, 14% instead of the previous 4% of financial resources of the local authority were committed for this endeavour.

At functional level, open space planning would emphasize on compactness and consolidation, for the various open spaces, which were expected to be accessible and spatially distributed taking into account the layout of the residential neighbourhood they served.

2.5 The Need for adequate provision of public open spaces and recreation facilities in Nairobi

Recreation open spaces are areas designated for leisure activities whether passive or active. Majority of workers in Nairobi today, enjoy the right of paid annual leave, besides free Saturdays and Sundays.

Conversely, the working hours have been simultaneously reduced to eight hours per day, hence leaving the workers with free hours before bed time to be filled with one activity or the other.

In most countries, especially those faced with economic problems, the plight of open spaces and all recreation programmes is very unfortunate. This has happened because economically lucrative programmes have often guided goal formulation and implementation at the expense of those programmes perceived as less economic. Consequently Mwaniki (1977) observes, "open space for recreation make little appeal to the cost-benefit analysts employed by Nairobi City Commission, for these facilities pay no direct rates, and they are expensive to acquire, landscape and maintain."

The case for open spaces provision and recreation planning is made more complex by the fact that their utility cannot be economically quantified. Given housing and recreational needs for instance, under budgetary constraints, housing gets the priority. In this context, social scientists always find themselves disadvantaged.

Studies on animal behaviour have shown that overcrowding adversely affect their behaviour as well as their biology and instincts for survival. Overcrowding in urban areas is manifested in such things as pollution, slums, disease, drug addiction, family disorganisation, withdrawal

and so on (Lendermann, 1959).

To counteract such forces, proper planning is of necessity, which takes full knowledge of the indispensability of open green spaces and the engagement in activities other than work. In defence for recreational spaces, Ledermann (1959:6) emphasized that:

play is of decisive importance for the psychological development and the maturing of man. The consequences of insufficient possibilities for active and creative play, clearly show results such as; poor imagination, nervousness and instability of children, waste of spare time, craving for entertainment, aggressiveness and rowdyism of many teenagers.

Man by his very nature must have contrast, change and challenge. Thus, recreation activities, not only give man the ability to cope with environmental stress, but also it allows him to experiment and to display his skills and to exercise his power over elements like seas, and mountains of his own space.

However, one question that is always asked within the intellectual circles is whether Kenyans really need recreation. Planning, being a futuristic view to development, looks into the future situation as opposed to the current. Same case, one needs to see Nairobi as the city of the future generation, with different values and preferences as opposed to those prevailing currently.

On the other hand, there are several social-economic dynamics which point towards a need for comprehensive recreation planning. Some of these trends are discussed below:-

2.5.1 Aesthetics

Notwithstanding any reason, that may be put forward for the provision of open spaces, aesthetics alone, and the resultant reafforestation of the battered environment is a justification enough. Though it is hard to define what is ugly or beautiful, conditions such as high density development without open spaces provision, overcrowding of any form, pollution and so on are generally held as ugly.

2.5.2 Increased urbanisation

Like any other developing country, Kenya is one of the fastest urbanising countries in the world. With the whole tempo of urbanisation, the traditional life style, where man freely intermingled with nature has changed.

Large numbers of people, hitherto accustomed to outdoor life found themselves working in factories, offices and finally sleeping in congested poorly ventilated houses. Currently, the total urban population in Kenya is estimated to grow to about 2.3million by the year 2000. It is therefore argued that if urban areas

areas continue to grow at the 1969-79 national average rate, the urban centres will have to accommodate 2.5 times, more population than they did in 1980, as indicated in Table 2

	1979 Actual population % share of urban population		(a) 2000 (based on 1969-79 growth rates) population % share of urban population		(b) 2000 (based on 1962-69 growth rates) population % share of urban population	
Nairobi	826	36%	2300	27%	3500	41%
Mombasa	341	15%	700	8%	1100	13%
Other existing towns	1138	49%	5100	59%	3500	41%
New urban centres	-	-	500	6%	500	6%
Total	2307	100%	8600	100%	8600	100%
% of population living in urban areas	15%		28%		28%	

TABLE 2: Urban Growth Projections by Year 2000 (in 000's)

(a) Assumed growth rates: Nairobi 5.0%
: Mombasa 3.3%
: other existing centres 7.4%

(b) As given in "Human Settlements" (1978) in Kenya.

Note: Kenya's Urbanisation index is 2000 urban residents.

Source: Obudho, R. (1988). The Role of Nairobi in Spatial Planning in Kenya: Towards a Planning Alternative. University of Nairobi.

In aggregate terms, Nairobi has been growing at substantially high rates. By the year 2000, using the 1969-79 growth rates, about 30% of total urban population would be residing in Nairobi - perhaps as many as 3.5 million persons (as given by Nairobi Urban Study Group 1973).

On the other hand, the number of towns meeting the Kenya urbanisation index is rising significantly. For instance, this number rose from 17(1948) to 89(1979). The implications of these trends is the continuous pressure and demand on an inelastic land supply, hence pointing to a need for serious forward planning in Nairobi. Such planning has to take into account the requirements for the various competitive land needs, without subordinating one to the other. More open spaces must be provided to counteract the side effects of overcrowding and the negative urban life styles.

2.5.3 Incomes

Education and income are closely related variables in Kenya. In 1967, the National Recreational Survey showed that income was a crucial factor affecting all levels of participation in recreation pursuits.

In almost every pursuit, participation increased with income.

The situation is also obvious in Nairobi because such games as golf are patronised by high income earners as opposed to football.

Despite the de pressing role of inflation, generally, the average income per household in urban areas has increased overtime. In Nairobi, for instance, Gross Domestic Product (GDP) is projected to increase eight times between 1971 and the year 2000 (Nairobi Urban Study Group 1973, Vol. II). The average income per household will be expected to rise by 60%, given that Nairobi's population will be five times the 1975 population. (Note: these figures need to ^{be} treated with care since the high income bracket heavily weight it).

Conversely, Nairobi generates more than half the national output in manufacturing, although by 1978, it had only 5.4% of total national population. It also accounts for two thirds (2/3) of the urban wage bill (Physical Planning Department, 1978). Nairobi also housed 58% of total manufacturing employment opportunities of the largest towns by 1974.

Given the above scenario, as a primate town, it generates a lot for the country's GDP, and hence, a better planning approach for it need to be rationalised (op. cit.).

2.5.4 Car Ownership

The increase in car ownership over years all over the world has greatly influenced the pattern of recreation activity. Studies in more industrialised

countries show that frequency of participation increases significantly with car ownership (Mwaniki, 1977).

Utilization of recreational facilities in Nairobi, particularly the district and urban parks, such as Aboretum and City Park, is a function of ease of transportation, both public and private. As Table 3 indicates, Nairobi has had tremendous increase in car population. The Nairobi Urban Study Group (1973) projected car population growth at 46% for a period of 10 years i.e. up to year 1980.

However, these figures are grossly underestimated, for current motor vehicle registration since 1980 to 1987, shows an annual increase of over 20% in car population. The 1987 vehicle population of Nairobi is estimated at 138,629 (47% of national figure) based on data from the vehicle registration office, Ministry of Transport and Communication. Table 3 below indicate motor vehicle increase for the year 1985-87 in Nairobi compared to the period 1960-1980 (20 years).

Though it is difficult to ascertain absolutely the exact number of cars at the disposal of the town currently, it is a fact that the number of cars actually operating within the city of Nairobi has grown significantly, even in the recent years of economic recession.

Year	(1000) No. of cars	% of total car population
1960	45,000	5.8%
1965	55,000	7.1%
1970	80,000	10.3%
1975	95,000	12.2%
1980	110,000	14.1%
1985	124,000	15.9%
1986	131,000	16.8%
1987	138,000	17.7%
Total	778,000	100%

TABLE 3: Number of Cars in Nairobi, 1960-1987

Source: Harold de Souza (1988) A Case for new town Considerations in Urban Planning

With better management in the public transit system like the exclusive bus highway and desireline, public transit will gain even greater importance and efficiency. This will consequently, enable the non-car owning population to enjoy the far sited recreational facilities presently utilized by the car owning Nairobians.

2.5.5 Education

The pilot National Recreation Survey (op.cit.) showed an inverse relationship between education and use of leisure time. According to the survey, interest and actual

participation in many recreational pursuits is closely related to the amount of education that one has received. These findings were confirmed earlier by a survey on Outdoor Recreation Resource Review Committee in U.S.A. (1962) after controlling other variables like income and age.

The increase in the number of educated Kenyan's must be reflected in recreational pursuits of one form or another. Besides an increase in primary, secondary and college education, university and other middle colleges have risen considerably, with the decade experiencing an increase of two additional National Universities besides the traditional Kenyatta and Nairobi University.

Though the trend for more higher education is rapidly increasing, it does not mean that all and only those educated get employment in the city. However, due to Nairobi's primacy, it gets the lions share of Kenya's most educated and best trained manpower.

2.5.6 Demographic Profile in Nairobi

While the size of the rural population in Nairobi is significant in determining the demand for recreation facilities, the population distribution and the age structure are of immediate importance. There are a wide variations in the distribution of the total population in Nairobi.

In 1974 for instance, 56% of Nairobi's population resided in Eastlands region including Pangani and Eastleigh areas. These densely populated areas will continue to outstrip their reputation because much of the new estates like Buru Buru, Dandora, Umoja, New Mathare, Kariobangi, Doonholm, continue to be put in this region. Nonetheless, these areas are most deprived in the provision of recreation facilities (Maina, 1982).

The age composition for Nairobi also dictate the need for better and adequate provision of recreation facilities. Over the last 20 years, Nairobi's demographic structure has undergone significant changes worth reckoning. In 1979 for instance, 34% of the total Nairobi population was under 15 years as opposed to 33% in 1971. It is also biologically logical that between ages 15-39 years, recreation interests are intense. Therefore, the city will have to meet the prime recreational needs of over 80% of its population.

On the other hand, demographic patterns reveal a shift towards trends that demand more open spaces. Based on 1979 census, Nairobi's sex ratio from 1962-1979 show that over the 15 year peirod, there is a leveling off of sex ratios, which points to more family units in the city, a fact which has a direct bearing on effective demand for more open spaces. Conversely, as more and more families became established in Nairobi and as transportation costs and gasoline prices keep on

escalating, progressively fewer urban-rural trips will be made. To these families more leisure activities will have to be provided.

2.5.7. Economic Benefits

Although on purely cost-benefit analysis the provision of recreation facilities may not compare with the provision of other services, recreation facilities, if well managed and planned could be income generating. Facilities for active sports such as tennis, squash, swimming, and others, are earning good money for the private club owners. If such facilities were provided within district parks and participants charged a little fee for their use, recreation in Kenya would cease to be a consumer activity. It would become not only economically self sufficient, but also an income generating sector.

2.6 The Need for the Provision of Public and Recreation Facilities in Eastlands, Nairobi

The living conditions prevalent in the old residential estates in Eastlands of Nairobi, are characterized by congested and poorly ventilated house structures (Agevi, 1989). Thus, as the units continue to accommodate a large population, the units are constrained with regard to their surrounding environment.

The Eastlands region of Nairobi is and will continue to carry the largest of Nairobi's population.

Table 4 below illustrates the population projection for Nairobi.

Constituency	Projected & Census Population				
	1979	1984	1989	1994	2000
Dagoretti	85,471	109,477	139,752	178,359	239,015
Embakasi*	79,523	101,404	129,535	165,323	230,979
Kaloleni*	112,668	143,798	183,528	234,239	313,882
Kamukunji*	123,219	157,262	200,711	256,164	343,284
Langata	133,882	160,613	218,075	279,000	372,989
Mathare	129,295	165,018	210,620	268,808	343,018
Starehe**	79,384	101,316	129,309	165,032	221,161
Westlands	98,666	125,926	160,717	205,121	274,881
Total	842,608	1,064,904	1,372,247	1,752,061	2,339,209

TABLE: 4 Nairobi's Population Projection up to the Year 2000

N.B. The above population projections are based on the 1979 population census adopting an average growth rate of 5% computed from the 1969 and 1979 population rates of change.

* Constituencies in Eastlands of Nairobi.

** Not whole of Starehe is in Eastlands.

Source: DURP Pumwani Urban Study, (1987).

Population concentration is aggravated by an increasing traffic congestion in the city, as exemplified by the car population in Table 3.

The above problem is further underscored by the fact that due to transport cost for travel to major public recreational open spaces such as Uhuru Park, City Aboretum and the City Park, (*Figure 3*), as well as their direct inaccessibility relative to the Eastlands residential estates, most residents have no opportunity to spend their leisure time.

On the other hand, Ngunjiri (1988) notes that some low income housing estates in Nairobi, most of which are in Eastlands, indicate professional negligence in environmental aspects, during initial stages of formulating urban plans. It is demonstrated, for instance that professional considerations in site planning for these estates has been down played (Ngunjiri, op. cit.). These implications have far reaching repercussions in the environmental and social well being of the residents in the major urban residential 'district' in Nairobi.

Besides, there is a systematic and persistent trend of encroachment into the already existing residential open spaces in the eastlands by other types of land uses (See Table 5 and Table 6). This trend underscores serious environmental and social consequences implied in the high density residential development (statistics

CITY OF NAIROBI

KIAMBU

To Thika

KAJIADO

To Mombasa

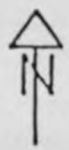


Figure 3 :

Source: D U R P 1987

MAJOR



MACHAKOS

L E G E N D:

- | | | | |
|--|---|--|--|
| | CITY BOUNDARY | | NAIROBI NATIONAL PARK |
| | RAILWAY LINE | | AREA OF LITTLE OR NO URBAN DEVELOPMENT |
| | MAJOR ROADS | | EASTLANDS |
| | OTHER ROADS | | |
| | RIVER | | |
| | MAJOR INDUSTRIAL AREA | | |
| | CITY CENTRE | | |
| | HIGH DENSITY RESIDENTIAL ZONES | | |
| | MIDDLE DENSITY RESIDENTIAL ZONES | | |
| | LOW DENSITY RESIDENTIAL ZONES | | |
| | FORESTS AND OPEN PARKS (major and public) | | |

LAND USES

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for the Eastlands have already been discussed).

Pre-Independence				Post-independence (income groups)			
Low		Middle		Low		Middle	
Estates	Size acres	Estates	Size Acres	Estates	Size acres	Estates	Size acres
Bahati	0.55	Parklands	2.65	Dandora	16.0	Buru Buru	28.2
Kaloleni	1.20	Nairobi South	7.00	Uhuru	5.37	Ngumo	8.0
Makongeni	3.65	Eastleigh	9.00	Kibera	2.7	Donholm	8.0
Mboleta	0.36	JuJa Rd.	4.58	Kariobangi	2.0	Golf Cours	6.75
Pumwani	0.21	Pangani	0.69	California	0.70	Golden Gate	2.65

TABLE 5: Public Neighbourhood Provision of Open Spaces in Low and Middle Income residential areas at pre- and post-independence residential development

Source: Adopted from Nairobi City Engineers, 1958 (with modifications)

Location	Original acreage	Present acreage	Areas subdivided
Kileleshwa	33.0	16.06	16.94
Manyani Estate	8.0	0.0	8.00
Joseph Kangethe	40.5	31.61	8.89
Woodley	7.00	3.50	3.50
Brookside Drive	2.63	1.35	1.25
Highridge	30.0	10.5	19.5
City Park	186.5	127.2	59.3
Makandara	NA	NA	3.67
Total	307.63	190.25	121.05

TABLE 6: Recreation Land Subdivion for Residential Development
(NA = Not available)

Source: Physical Planning Dept. Valuation Section Nairobi City Council

While it is the policy of Nairobi City local government that every residential estate developer surrender 10% of total land to be developed for public purpose and recreation, as one of the conditions for plan approval, Table 6 (page) indicates that many residential developments fell short of this requirement at the time of this research. In fact there are cases where only 2-3% of land has been left for public and recreational needs (op, cit).

On the other hand, developers have had no action taken against them because this requirement is not catered for in any existing planning legislations. Thus, the Chief Valuers Report of September 1965 for the City observed that whenever the 10% surrender provision would be observed, such spaces occupied locations within the scheme where the pieces of land could not accommodate a housing unit. It is these pieces of land that Mwaniki (1977) has referred to as 'incidental open spaces', which have no function assigned to them by the virtue of their locational character and shape in the entire residential scheme. Such open spaces are criss-crossed by footpaths that indicate localized desire lines for the local community and also function as open earthen channels for storm water.

On management, Maina (1982) notes that before 1973, Nairobi Local Authority required residential developers to pay a lumpsum amount of money to the authority for the maintainance of the open spaces in new schemes. Latter, the Local Authority realized increased

cost of landscaping the surrendered open spaces and further made the requirement that:

.... the responsibility to develop open spaces rested entirely on the developer and an opportunity was offered to developers to transfer open spaces to the City Council after special arrangements (Ibid. 34).

The requirement in the 'special arrangement' removed the obligation to undertake landscaping of the open spaces by respective developers. This contradicted the S.145(h)-(0) of Local Government Act Cap. 265 which places the responsibility of maintaining open public spaces, especially those planned for recreational purpose, on the Local Authority.

The problem of maintenance of open spaces in Nairobi at residential neighbourhood level is further compounded by persistent financial inadequancies. Thus, City Planning and Architecture Department observed that:

.... The council is so often plagued by financial problems to the extent that, sometimes, directly or indirectly, the developers are discouraged from providing neighbourhood parks as a means of avoiding maintenance issues (Mwaniki, 1977).

This underscores the prevalent trend where provision and maintenance of open spaces in recent residential estates such as Dandora, Mathare North, Pioneer and Umoja II, all in the Eastlands, have been down played in both their physical plans and implementation (ibid.). This observation reinforces the prevalent policy of the City

Planning and Architecture on behalf of the Local Authority which does not encourage provision of open spaces in new residential schemes at plan formulation stage if funds for their development and maintenance are not provided for at the onset (op. cit.). The policy also partly explains the change of user of the open spaces for other development in the Eastlands districts of the city, as in the two major open spaces in Kaloleni and Kamukuji grounds which were transferred to City Education Department for use by adjacent primary Schools, though formerly under the City Parks Superintendent.

For the last decade alone, 39% of recreational land has been officially subdivided. This is a rather detrimental exercise, and it is imperative to retain whatever little recreation land the city possesses.

2.7 Summary

From the preceding observations, it is clear that the institutional effectiveness as far as open space encroachment is concerned, is highly questionable. Departments that are directly responsible for maintenance, enforcement and landscaping of open spaces operate as autonomous bodies with minimal consultation.

The City Parks Section under the City Engineer's Department for instance, and the City Planning and Architecture hardly work in close consultation with each other, yet they deal with one and the same problem. On

the other hand, the City Inspectorate department, whose responsibility is to demolish illegal construction as well as general enforcement of City By-laws hardly work in consultation with the City Planning and Architecture Department.

In effect, these departments, operating as autonomous bodies lack the planners input especially in locational matters. The planners have an indispensable input in location of kiosks and other forms of hawking activities in the city, yet the city inspectorate Department hardly consult the former for such inputs.

In other instance, influential persons have used their bureaucratic positions to acquire these spaces for other uses. A case in point is 1982 when there was a Presidential intervention against possible acquisition of a school play field by a private developer in Uhuru Estate (Maina, 1982).

CHAPTER THREE

THE STUDY AREA(S)

3.0 Introduction

The study area(s) is located in Nairobi's Eastland, but specifically focusing on three residential estates, mainly Bahati, Uhuru and Umoja II. ^(Figure 5) In the 1948 Nairobi Master Plan, this region was zoned out for African population based on the economic justification that Africans were better if their residential areas were close to the major source of employment - the industrial area.

The economic advantage in this proposition was that commuting distance would be short and therefore they could easily walk to the work places. It is however, unfortunate that this type of outlook has not changed given that the city's poor population continue to find shelter in this region under the new residential housing development.

3.1 Nairobi Eastlands: Physical and Environmental Characteristics

Relative to other parts of the city, Eastlands is generally a dry area, low lying and flat. Besides Nairobi river, there is no other significant physical feature.

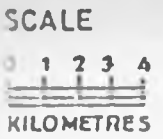
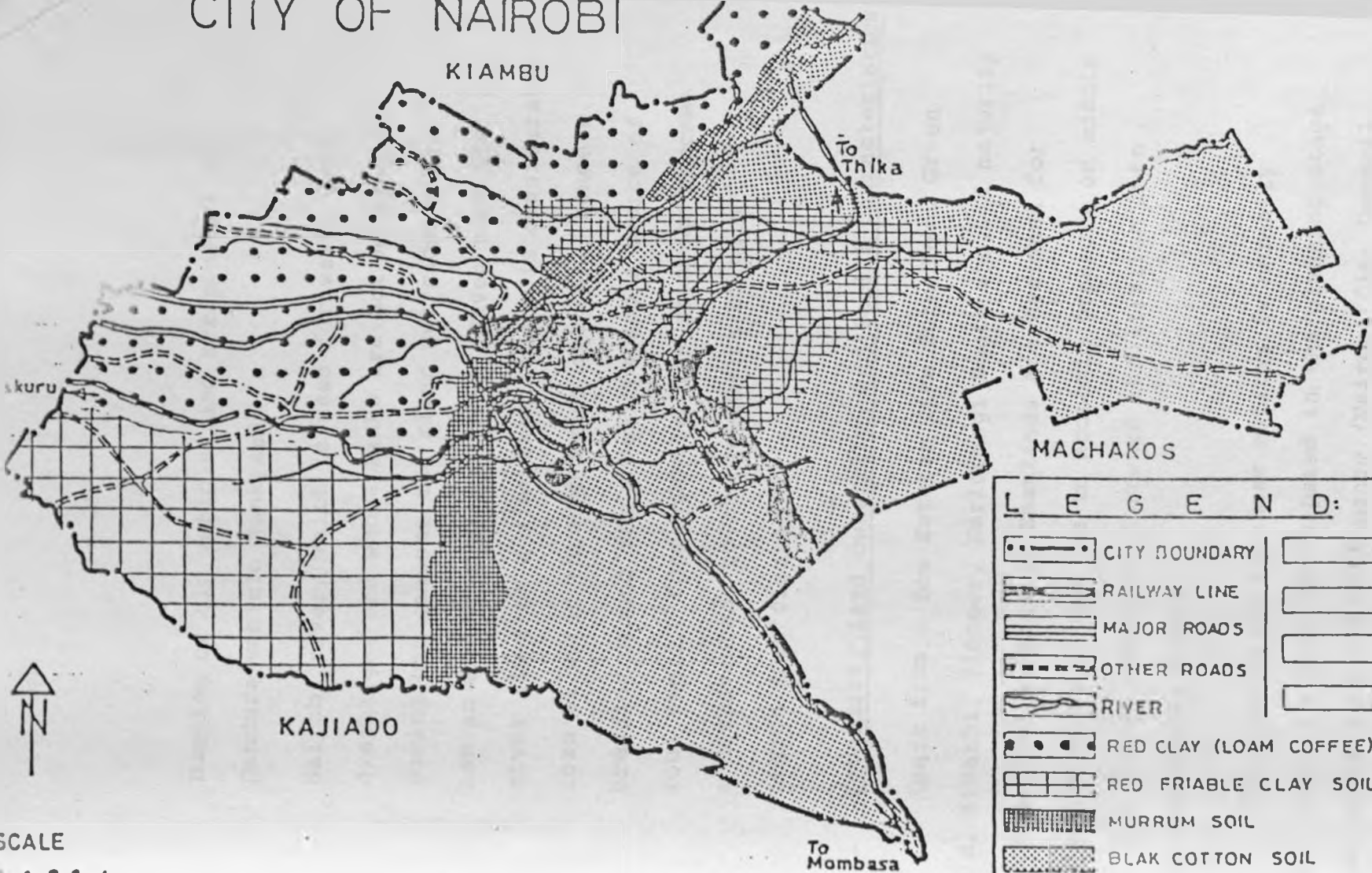
Based on climatic/vegetation criteria, geographers have identified Eastlands as one of the six ecological zones of Nairobi, characterized by scanty vegetation cover in the nature of scrubs, grass and bush. The area is also characterized by black cotton soil, which goes up to one meter in depth (See Figure 4). Due to the flat topography and nature of the soils, the drainage is quite poor.

Environmentally, the region has the lowest quality. Meffert (1981) referred to it as the largest "Heat Island" in Nairobi. From the flat nature and vegetation scantness, Eastlands is therefore hotter than the rest of Nairobi.

Besides the ecological limitation, the low environmental quality is further aggravated by other factors like:

1. Fumes, smoke and smell from the industrial activities of the Nairobi's main industrial area located south of the Eastlands, and the steel industry in Eastlands itself;
2. Foul smell from sewage works at Kariobangi, located on the windward side of the region;
3. Noise and vibration from the aircraft at Eastleigh Air base and the trains on the railway line to Nanyuki;
4. Dust and vibration from the quarrying activities in Dandora, Njiru, etc;

CITY OF NAIROBI



LEGEND:

	CITY BOUNDARY	
	RAILWAY LINE	
	MAJOR ROADS	
	OTHER ROADS	
	RIVER	
	RED CLAY (LOAM COFFEE) SOIL	
	RED FRIABLE CLAY SOIL	
	MURRUM SOIL	
	BLACK COTTON SOIL	
	ALLUVIAL SOIL	
	SHALLOW CLAY	

Figure 4 :

SOILS TYPES

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5. Dumping of old vehicles and scrap metal in Dandora vehicle junkyard;
6. Nairobi river, which is used for waste water discharges and whose banks are not maintained. During hot seasons the river get clogged and has an almost stagnant flow. Given that the river flows on a flat area, there is considerable loss of water through evaporation, hence a breeding ground for mosquitos and a source of foul smell. Consequently, its presence becomes a disadvantage to the residents of this region (See figure 5).

3.1.1 Economics, Land ownership and Social Characteristics

Apart from a few Estates like Buru Buru, Green Field, Kimathi, Pioneer, Kariobangi South etc, a majority of residential estates in Eastlands are designed for low income earners, but due to economic pressure on middle and high income earnings, downward infiltration into these estates is common.

The population in these estates is normally higher than is always anticipated in the planning stage due to subletting and subtenancy (Nairobi City Council, 1989).

As regards land ownership, in the overall it is owned by the Kenya government but leased to two Corporations and the Nairobi Local Authority (formerly

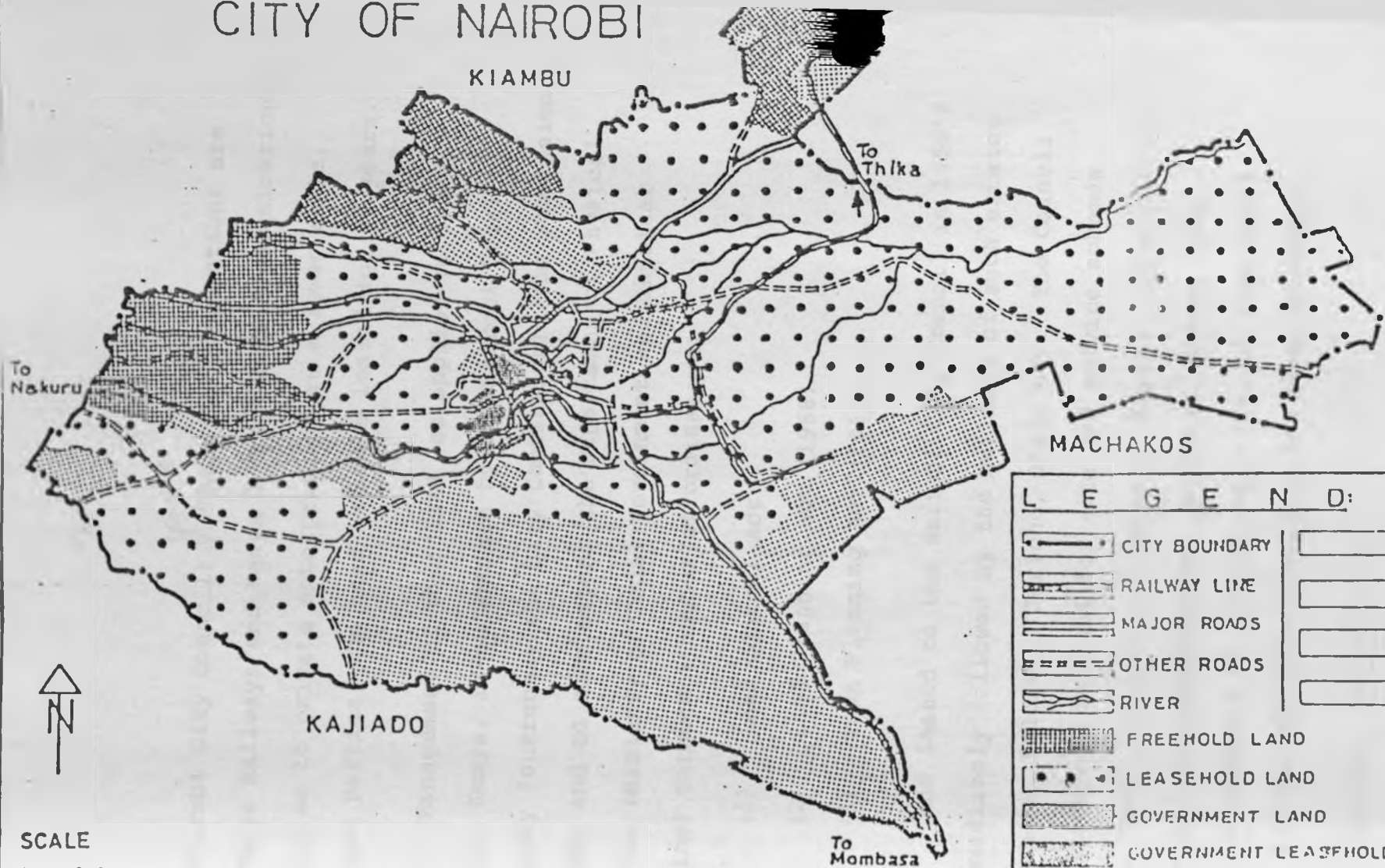


FIGURE 5 :

ENVIRONMENTAL PO

Source: Maina, F 1982

CITY OF NAIROBI



LEGEND:

	CITY BOUNDARY	
	RAILWAY LINE	
	MAJOR ROADS	
	OTHER ROADS	
	RIVER	
	FREEHOLD LAND	
	LEASEHOLD LAND	
	GOVERNMENT LAND	
	GOVERNMENT LEASEHOLD LAND	

Figure 6 : LAND OWNERSHIP

SOURCE: D. J. K. B. P.

Baini, J. K.
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the Nairobi City Council).^(figure 6) These two Corporations are The Kenya Railways and Kenya Posts and Telecommunications, as well as to private enterprenuers at a lower scale. To these parties, the land has been leased for 99 years.

Management of this land as applies to other lands in Kenya, is undertaken by the Nairobi Local Authority (currently the City Commission), the Commissioner of Lands and to some extent the Department of Physical Planning (Ministry of Local Government and Physical Planning) through a number of ordinances;

- (1) Land Control Act
- (2) Land Planning Act (1968)
- (3) Town Planning Act (1931).

Land leased to the Nairobi City Council in 1950's was immediately followed by the building of such estates like Bahati, Kaloleni, Jericho, Ofafa etc. The Council also allocated some land for site and service schemes such as Umoja, Dandora and recently Kayole. Alternatively, the Council developed tenant purchase schemes like Uhuru and Harambee at subsidized costs, to experiment on the African attitude towards urban home ownership.

3.1.2 Housing Patterns

The location of African residential houses in Eastlands, as observed in Section 3.1, never took into account the aesthetic element which was strongly upheld in European areas.

The Africans were to be located where:

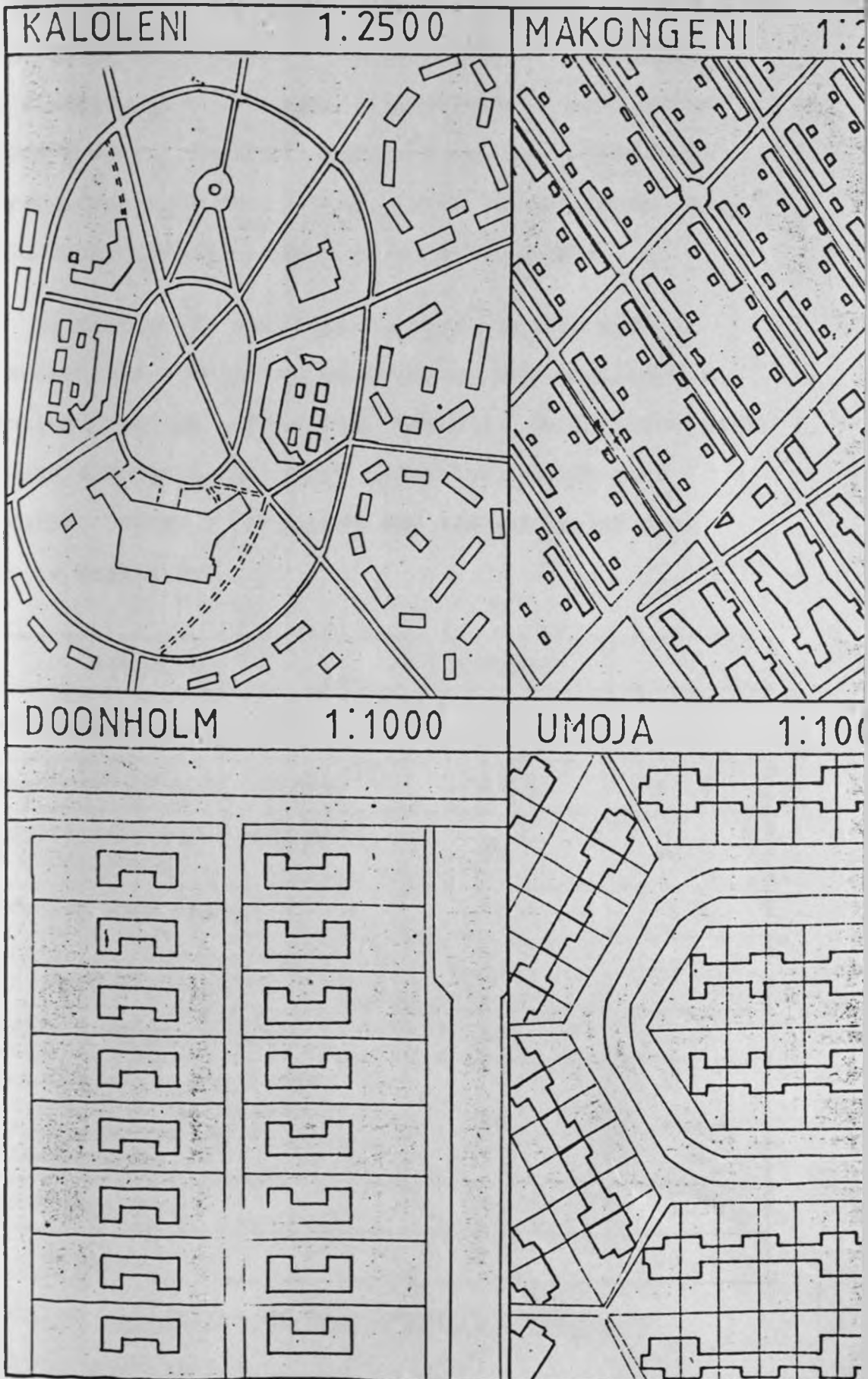
.... there were offensive land uses such as dumping and other fringe land uses like cemeteries (Maina 1982:25).

The housing structures and layout of Eastlands varies from one estate to the other. However, most of them show an inclination to neighbourhood unit planning, as exemplified by the newer estates like Buru Buru, Uhuru, Umoja, Kariobangi South etc. The general street pattern resembles a grid-iron with the exception of Kaloleni which has a radial street pattern (See Figure 7)

The densities are high as well as room occupancy rates. In terms of density, the master plan recommended a density of 12-16 houses to the hectare, while the European areas carried 1-2 houses to the hectare. New Estates like Umoja II have densities as high as 163 units to the hectare.

The room occupancy rate on the other hand is above the set standards by the National Housing Corporation policy which requires that there should not be more than 2 persons in a room of less than 80 square feet. However, most of the structures in Eastlands, about 50% have between 10' x 12' a room and 14' x 9' yet the average occupancy rate is 4 people per room. In Bahati alone, the City Planning Section, Redevelopment study identified an average occupancy rate of 6 persons to a room of 10' x 10'.

FIG. 7: SELECTED ESTATE LAYO



Being a densely populated area, Main (1982) observed that there are too many users per one hectare of open space, that is 9716^{Persons}/per hectare. On the contrary, Nairobi City, Planning Unit proposes 1.2 hectare of open space per 1000 people. In Eastlands, only a few estates met this requirement at face value and in actual terms, only Donholm housing estate meets these standards.

In Eastlands, there are several categories of open spaces but a majority of them are undeveloped for recreation purposes. Some like Kamukuji (a district park) have been allocated for light industrial activities (jua kali). Table 7 indicates the categories of open spaces in Eastlands.

Category	Hectare	
Recreational Open Space	20.15	6.64
Neighbourhood open spaces	53.24	17.6
Unbuilt area but committed to development	98.6	32.7
Riverine open space	17.5	5.8
Marshy site between Umoja and Kariobangi South	75	24.9
Airfield approach space	12	24.9
Site between Donholm and Umoja Estate sterilized for development by high voltage line	20	6.64
Old sewage plant	4	1.32
<i>TOTAL</i>	301	100

TABLE 7: Categories of Open Spaces in Eastlands

Source: Main (1982).

Tree planting and landscaping is an unavoidable component in open space planning. Eastlands, though characterized by a hostile environment suffers most in meeting the landscaping standards, as developers are not obliged to undertake rigorous landscaping.

According to a report submitted by the Director of City Planning regarding landscaping and tree planting policy, one of the major objectives stipulated in the report was:

to achieve unity in design and coherence in housing layout, to supplement the bare form of buildings with more natural and visual pleasing environment.

The report recognised that the satisfactory implementation of the policy lies in the ability of the developer to reconcile a number of conflicting factors such as nature of soil, existing vegetation, closeness of trees to buildings, existing services and selecting the right tree species for the site. However, the report did not go into the rigours of analysing the standards which should be borne in mind in implementing the policy. The loophole in this report has been experienced mostly in Eastlands region of Nairobi.

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3.2 Study Estates

3.2.1 Introduction

The three study Estates, Bahati, Uhuru and Umoja II are of Nairobi's Eastlands but developed at different times in Nairobi's Urban development. Bahati was developed under the Master Plan 1951, Uhuru, 1967 (the period immediately after independence) and Umoja II, 1981.

Their specific characteristics are outlined in the following sections.

3.2.2. Bahati Estate

Location: Bahati Estate is situated 2.5km from the City Centre of Nairobi and is part of the Eastern Division of Nairobi. It is bordered on the western part by Shauri Moyo Estate.

History: Bahati was developed early 1950's following recommendations from African Housing Estate Committee in which 1966 units were constructed. The scheme was meant for African employees who were entitled to a housing allowance of Ksh.9.50 per month, in which the rent fixing committee fixed the economic rent for a unit in Bahati at the same level of Ksh.9.50.

The name 'Bahati' originated from the residents who were staying at Pumwani area near Biafra and who lived in shanty structures made of carton papers. When the first phase was completed in 1949, the first lot of tenants who could occupy those houses were considered as the 'lucky ones' by their counter parts who did not manage to occupy the units. From then henceforth, the estate retained its name Bahati, which is a Kiswahili word for 'luck'.

During the year 1952-53 when the colonial government declared a state of emergency, most people from the Kikuyu tribe were moved from Kaloleni and concentrated in Bahati. The entire estate was then fenced and only one gate leading to the units was left where a pass book was issued for identification. From those days on, Bahati population came to be predominantly Kikuyu.

However, residence in the estate was only allowed to the Africans with legitimate reasons of being in urban

areas (basically employment). Tenure of occupancy was in terms of bed spaces. Thus, one room could be rented to two or more tenants, as they were not expected to have their families with them. Therefore it is not uncommon to get two or three legal tenants in one room, a condition which persists even today.

At its inception, Bahati was considered to lie at the periphery area of the city though within an ideal situation especially for the low income groups due to its proximity to employment areas, mainly the industrial area and the city centre.

3.2.3 Characteristics of the Residents

Most of the residents are married but do not live with their spouses. This condition is explained by the persistent old traditions where men left their families behind in the rural areas when they came for urban employment.

In terms of occupation, a large section of the residents are retired, and for a living they are involved either in manual jobs, petty businesses or hawking. Therefore, the estate is littered with kiosks, run by old men and women although some do not seem to be doing very well especially those at the centre of the estate. Kiosks close to the eastern edge of the estate are doing well, indicating that their clients are drawn from Kimathi estate (a middle income residential estate).

On the other hand, the rampant petty business activity and hawking are camouflages of unemployment in the estate, which implies that most of them are unemployed. Consequently the estate could therefore be classified as a low income neighbourhood.

Bahati tenants are recognised by the City Forward Planning Section (1989) as fully urbanised since over two-thirds (2/3) have spent more than 20 years in the estate.

3.2.4 Layout of Houses and Open Spaces Provision

There are four types of housing in the estate, but the predominant type is the 'block housing' characterized by natural stones and roofed with tiles. Renting is on room to room basis. There are also experimental housing located to the eastern side of the estate and next to the eastern shopping centre. Some of these experimental houses are built of tin material and are fairly uncomfortable during both the hot and dry seasons. A second category of houses appear like 'Maasai' housing or like the Eskimo Igloo. These type of houses have not been duplicated elsewhere in the estate or in the city.

It could be an indication that they were not considered suitable though still in use. These experiments also demonstrate that African housing was never

a serious policy in the colonial government housing policy. There is also a site and service scheme which is physically very different from the rest of the housing structure. Though the roofing is made of tin, the units are in good condition. So far, these units are however suitable for family use, but like in other areas, they are overcrowded, with plot coverage above standards.

The bulk of the estate is owned by the City Authority (apart from the tenant purchase unit) and so the occupants are tenants. Apart from legal tenant, illegal sub-letting has led to a large number of sub-tenants.

Having been developed under the master plan guidelines, the estate enjoys a significant level of open space, of public and semi-private levels. The estate layout plan show a strong inclination to the neighbourhood unit principle Figure 8 and 9 illustrate a typical courtyard structure in Bahati.

Due to generous provision of open space in Bahati, and the fact that most of the residents are old, retired and unemployed, much of the open spaces have been put to petty farming and other informal businesses like hawking, charcoal selling, garages etc.

The main neighbourhood park is located along Nairobi river. Though undeveloped to serve its recreational purposes and also limited by the environmental constraints

BAHATI

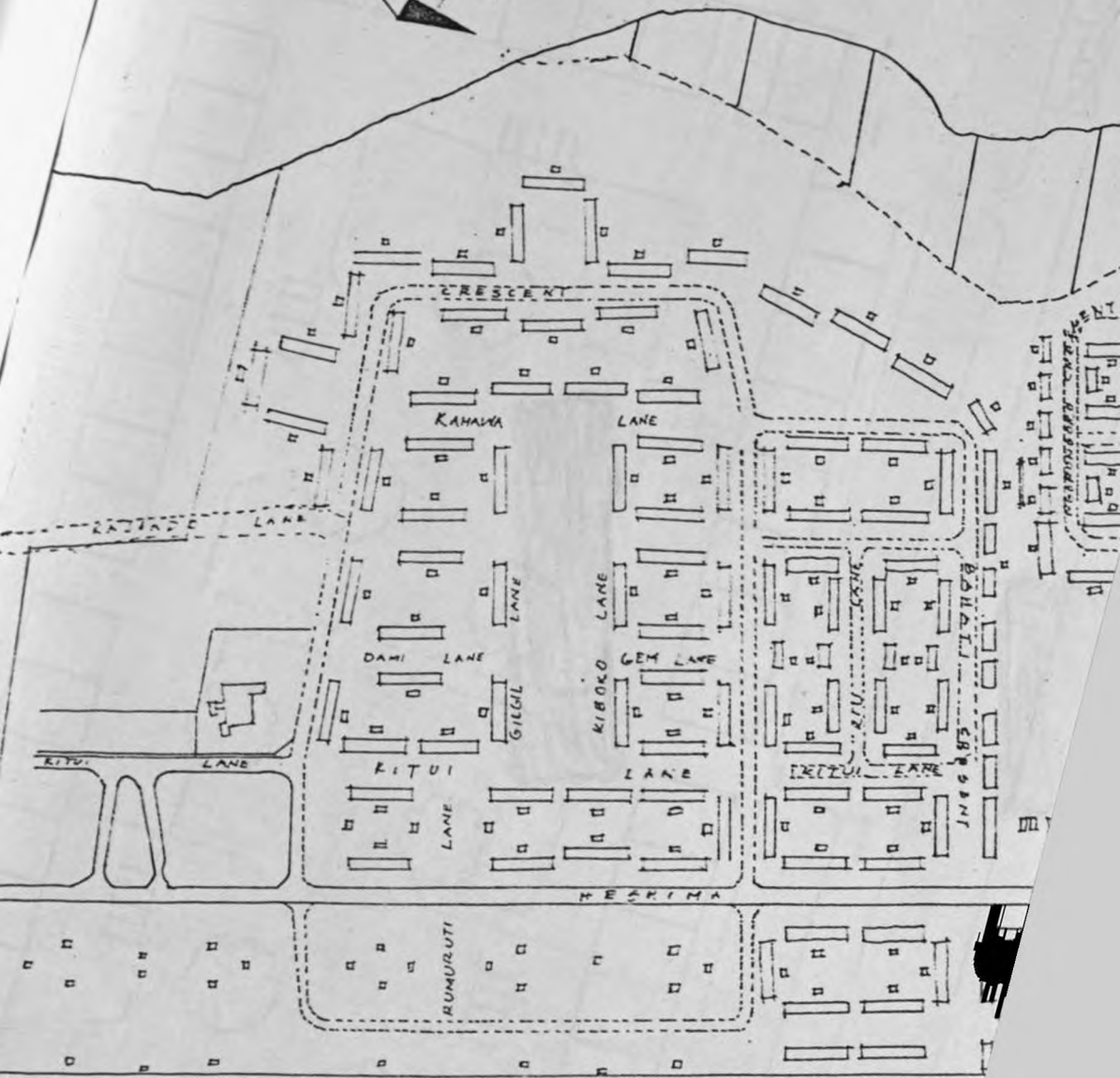
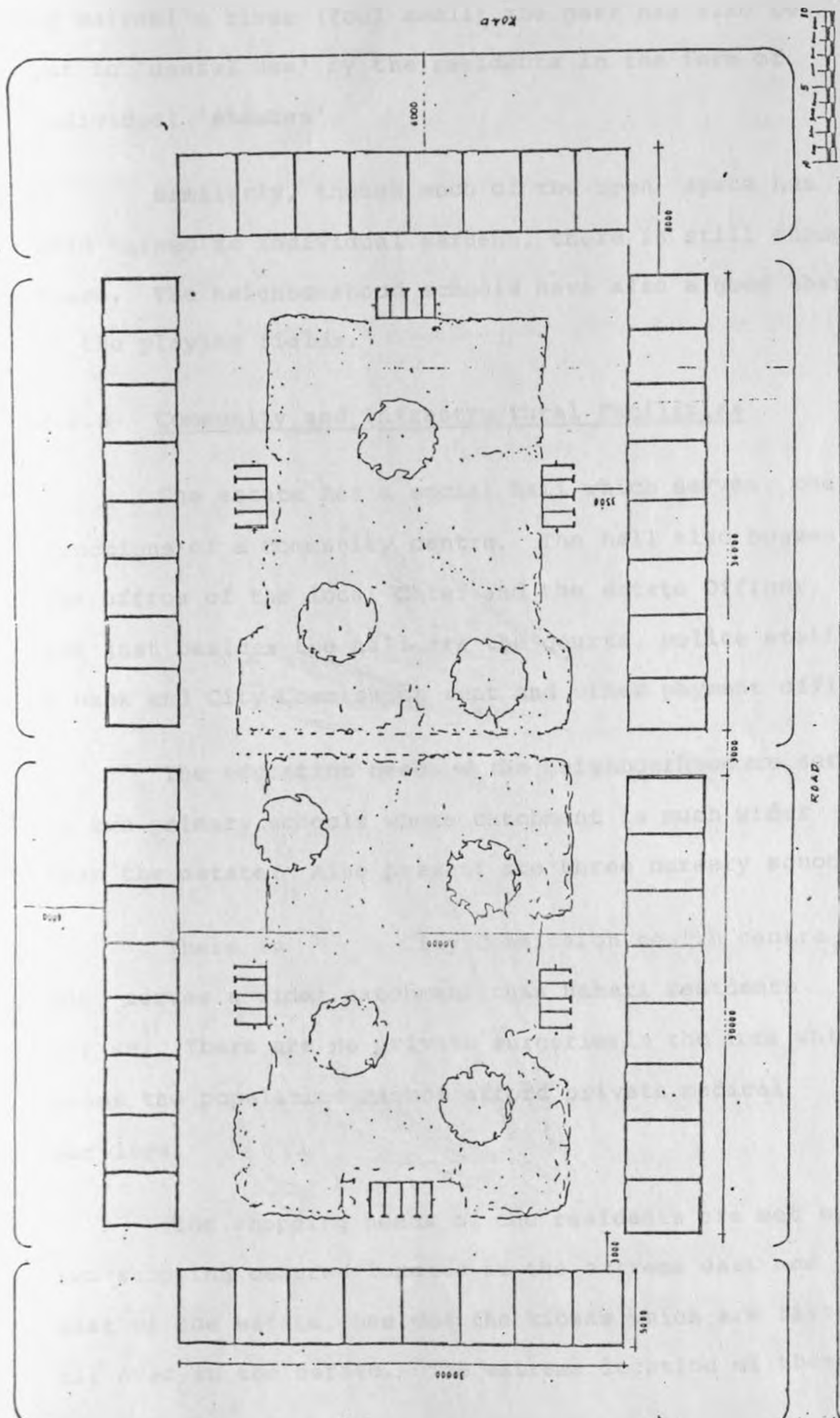


FIGURE 8

BAHATI

Figure 9: Typical courtyard in Bahati.



SCALE 1:2000

Source Agevi, E 1989

of Nairobi's river (foul smell), the park has also been put to 'useful use' by the residents in the form of individual 'shambas'.

Similarly, though much of the open space has been turned to individual gardens, there is still enough space. The neighbourhood schools have also a good share of the playing fields.

3.2.5 Community and Infrastructural Facilities

The estate has a social hall which serves the functions of a community centre. The hall also houses the office of the local Chief and the estate Officer, and just besides the hall are the courts, police station, a bank and City Commission rent and other payment offices.

The education needs of the neighbourhood are served by two primary schools whose catchment is much wider than the estate. Also present are three nursery schools.

There is a City Commission health centre but serves a wider catchment than Bahati residents per se. There are no private surgeries in the area which means the population cannot afford private medical services.

The shopping needs of the residents are met by two shopping centres located at the extreme east and west of the estate, besides the kiosks which are littered all over in the estate. The extreme location of these

shopping facilities renders them inaccessible to most residents especially those in the middle of the estate.

Bahati estate is served by all weather roads connected to each block of houses but no individual parking facilities are provided. In all, it has a total length of road network of 6,100 meters and all the units are accessible through the road carriage way and the general road network.

The existing water reticulation system serves the population through public stand pipes. Therefore, the upkeep of the system is the responsibility of the City authority and due to lack of prompt repairs there is a lot of waste of water upon breakage.

The area is served by a system of sewers into which the communal toilets drain. There is also a network of open channels for storm/surface water drainage, and the system feeds into Nairobi river.

Though the main power line to the Eastlands passes through the estate, there are very few individual connections. However, in the site and service schemes all the units have individual connections. Streetlights though provided are hardly in working conditions. Like electricity, telephone services to Eastlands pass through the estate but individual connections is an exception than a rule. There are pay booths at the shops and the Chief's Camp.

3.2.6 Uhuru Estate

Location:

Uhuru estate is located in Nairobi's Eastlands, approximately 3 miles from the city centre. It is off Jogoo Road and about 300 yards on Rabai road which cuts through the estate phase I and 2. To the south is Buru Buru Road which traverses phases 2 and 3. It is bordered by Jericho estate, Jerusalem, Harambee and Buru Buru on the west and south-east respectively.

History:

The estate was developed late 1966, there after Kenya attained independence. At its initial stages, Phase I was completed with 592 units to cater for low income earners in the category of tenants. These houses contained two rooms, kitchen, a shower and wet closet (w.c.).

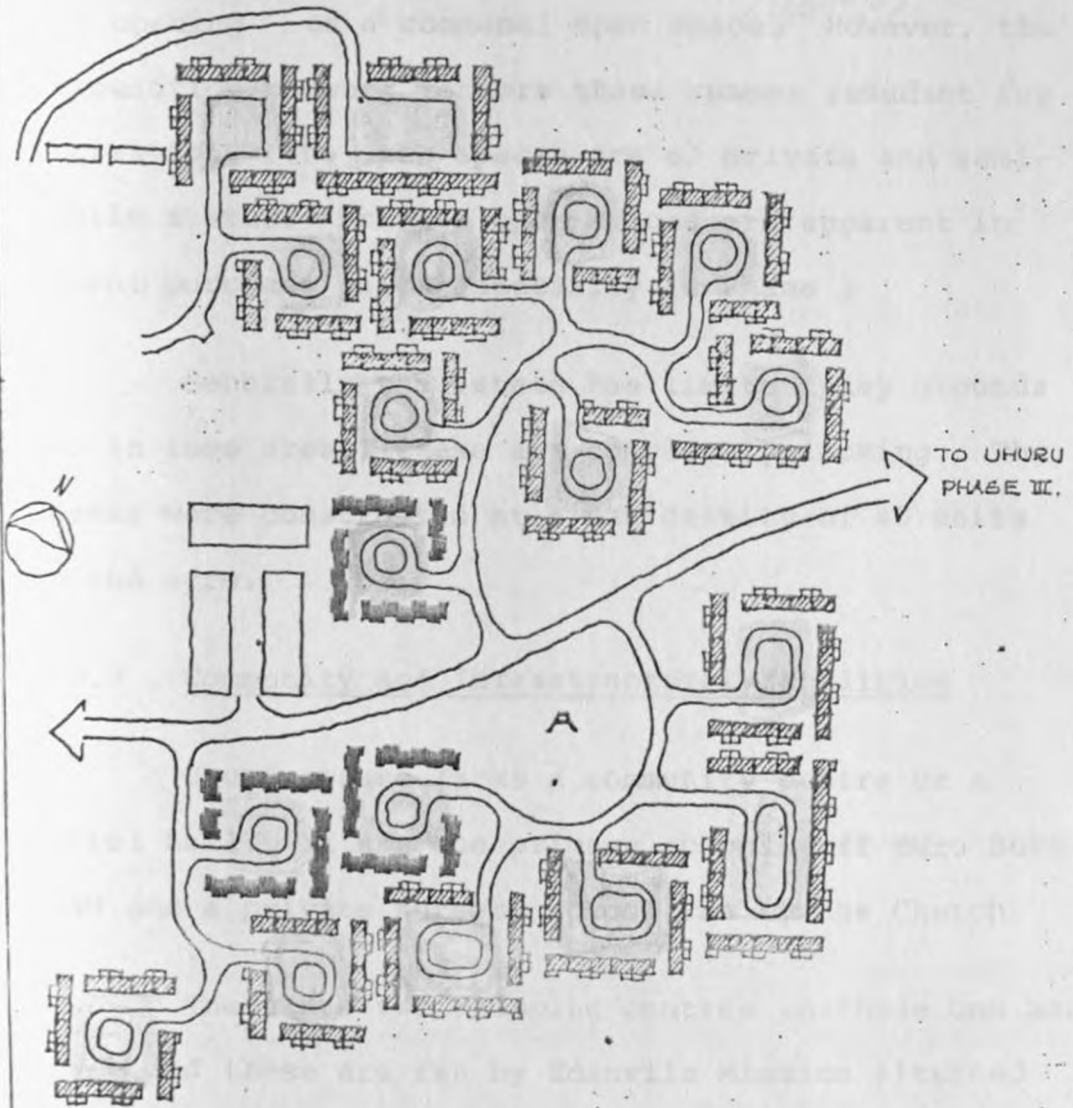
Some 264 units were slightly bigger with a shower, kitchen and toilet attached outside the unit. The estate got its name from the time of its construction, that is, at independence era. Besides, it was the first housing estate to be designed by independent African Planners. In late 1967, Uhuru phase 2 was added to the scheme with an approximately 324 units. These units were the same as those in Phase I, but with an additional room for store and an enclosure (courtyard) between the houses.





Phase 3 was developed in 1968 and today it offers tenant purchase for low income earners. In it were 280 units. The house type resembled those in Phase 2 but with little larger rooms and an enclosed verandah.

Uhuru Phase 4 was completed in September 1971. It consists of 228 single storey and 66 double storey houses. The planning of the scheme and design of the same was done by the Nairobi City Council and built by direct labour. The scheme was implemented as a building experiment with precast reinforced concrete elements, cast on site and erected by a mixed gang of unskilled and skilled labour under supervision of a resident engineer. The aim of this experimental project was to gain experience with the process of building houses on-site precast concrete element by an ordinary labour force for establishing of a high quality of construction and a speedy building process for future housing schemes (See Figure 10).

3.2.7 Characteristics of Residents

Though the estate was designed for low income earners, the current population (as confirmed by the Estate Officer) display a mixture of low and middle income earners. This does not negate the fact that the estate is a low income housing scheme categorically designated so by the city authority.



-  ONE STOREY BUILDINGS
-  TWO STOREY BUILDINGS
-  EXISTING BUILDINGS
- A** SITE FOR PRE-CASTING YARD
-  Major Semi-public Open spaces.

BAINI J-K
DURP
1989/90
Source : H.R.D.U

FIGURE 10 : UHURU LAYOUT PLAN (Phase 4)

3.2.8 Layout of houses and open space provision

Housing layout, unlike Bahati lacks the visual character of a neighbourhood. The houses are semi-detached and opening on a communal open space ^(Figure 10) However, the circulation network renders these spaces redundant for recreation. The open spaces are of private and semi-public status. Private open spaces are apparent in tenant purchase units especially in Phase 3.

Generally the estate has limited play grounds and in some areas, these are completely lacking. The houses were constructed at a net density of 40 units to the acre.

3.2.9 Community and Infrastructural facilities

Uhuru estate lacks a community centre or a social hall. It has one primary school, off Buru Buru Road and a private nursery school ran by the Church.

There are two shopping centres in Phase One and Three, and these are ran by Edanvile Mission situated within the estate. The shopping facilities are well distributed and therefore they are accessible by a majority of residents. Jericho market offers yet another shopping alternative for the residents. Consequently, kiosks have not gained full control of the estate's shopping need but they are gradually emerging.

The shopping centres also provide for public parking, but these facilities are inadequate due to the increasing number of the car population in the estate.

The circulation system of Uhuru Estate is rather poor. The units are not easily accessible from the main streets. Hence residents have cut foot paths within the estate that criss cross the estate from all directions.

The planned footpaths have been eroded off by surface run off and only patches of tarmack can be seen. Electricity is connected to each individual unit but telephone connections remains an individual effort to make.

3.2.10 Umoja II Estate

Location:

Umoja II Estate is located on the east of Nairobi, approximately 10km by road from the city centre, on a mass of black cotton soil which is part of Athi-Kapiti plains. It is the second phase of Umoja housing scheme, but carries a peculiar housing characteristic of Condominium design which is not in Umoja I.

Compared to the rest of Eastlands, Umoja II area depicts characteristics of grassland, and under normal circumstance, would consist of Acacia Species and Red Oak grass (Themeda Triandra). The climate therefore

is fairly extreme, with higher day time temperatures, colder nights and less rain. It is a semi-arid zone receiving about 500-700mm of rainfall a year. This makes the area suitable for ranching but not cultivation in terms of agricultural land uses.

History:

Umoja II covers an area of about 67 acres. It was developed early 1980's through joint efforts of United States Agency for International Development (USAID), the City authority and the Government of Kenya, hence the name 'Umoja' which is a Swahili word for 'partnership.'

Umoja II is a large housing Estate designed for low income families and consisting of 4,406 housing units with adjoining facilities. It is a home ownership project under the category of site and service .

Though the estate was started in early 1980' with full occupation expected in 1988, the process is still ongoing, with completion of all works being phased out by zones. So far, about three zones have been completed with full occupation, and their management handed over to the City authority by the developer. Work on the rest of the estate is patchy and zone eight has not been started as yet.

3.2.11 Characteristics of Residents

Umoja II was designed for low income families whose monthly income ranged between Kshs. 1,400 - 2,400/- (i.e. 30 - 50th income percentile for Nairobi). However, the current category of residents are neither in this group of people nor are they (completely) the initial plot allottees, as the plots have changed hands (sold out).

Like Uhuru residents, most of the Umoja II residents cannot be classified as low income earners. The housing problem in Nairobi has led to the estate invasion by middle income earners. Only a small group of initial allottees qualify as low income earners, but their number is decreasing as a result of plot selling. However, since the initial planning catered for low income earners, and within the City authority records the estate is categorized as low income housing scheme, then mere invasion by middle income earners does not disqualify the estate for this study.

3.2.12 Layout of Houses and OpenSpace Provision

The housing layout takes the form of condominium (comprising 93% of the project) of either five or six units around a common courtyard (See Figure 12 and 13).

Sanitary facilities (one for each unit) are clustered at one corner of the condominium. Within a single condominium are four different unit types,

Power Way/leave

PF
1.5Ha

KS
15Ha

CP
0.25Ha

PS
14Ha

PE
10Ha

SP
0.75Ha

HC
0.25Ha

CC
0.5Ha

CM
0.4Ha

PO
0.24

SC
20Ha

WS
20Ha

PS
15Ha

PF
20Ha

SP
0.35Ha

NS
0.9Ha

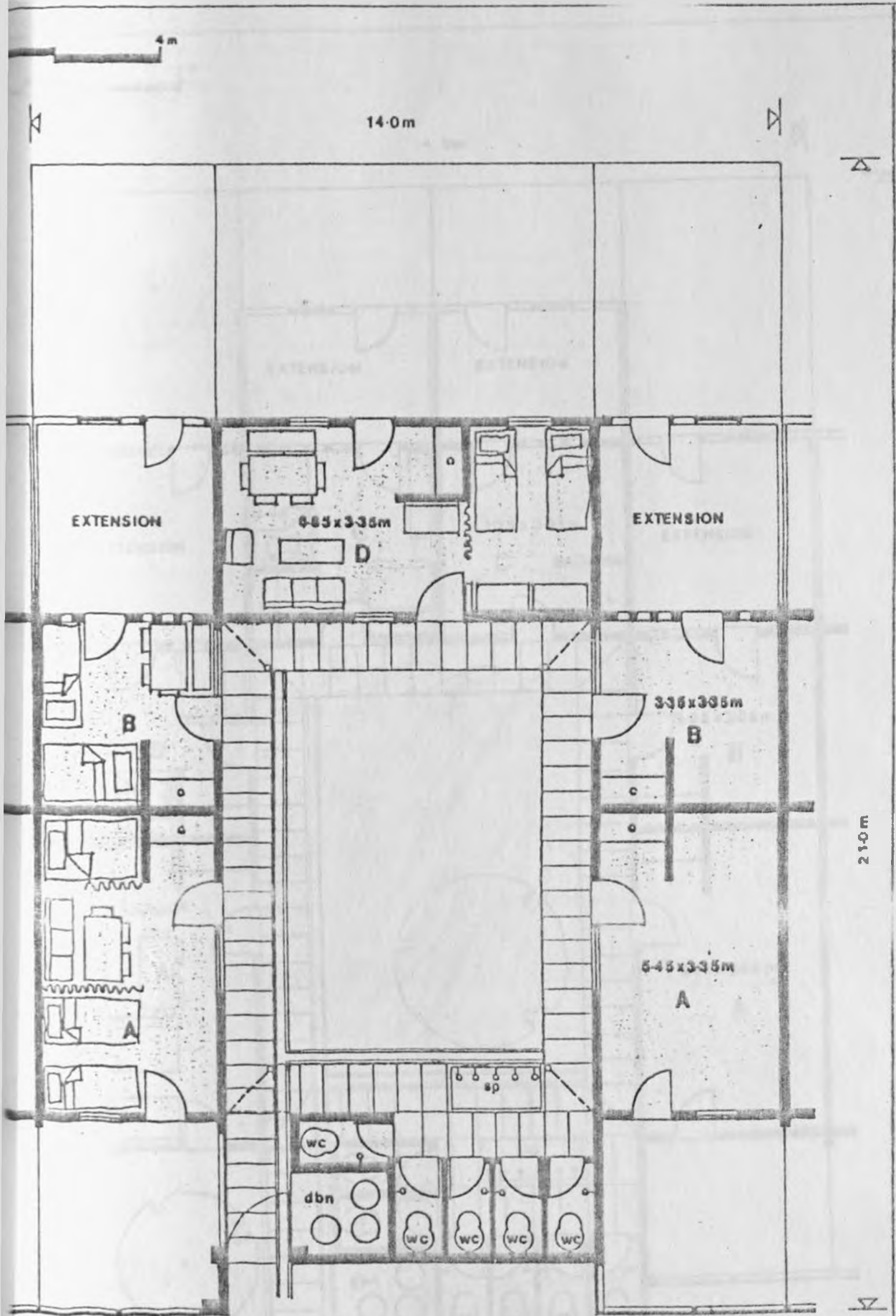


each with a single room initially, but through extension or division, can later be developed into two rooms.

The second type of unit consist of core-units, which is provided as an alternative to the condominium. These comprises of a self contained unit with one room initially, a toilet and a shower. The rooms can be added by the purchaser of the plot to a four-roomed house in the provided space for extension (See figure 14). For demonstration, the contractors have completed thirteen such units with corner shops (dukas).

As a site and service scheme, the project represents a marked shift in the goverment housing policy. ~~to move~~ from the traditional approaches where goverenment played the role of a provider than a facilitator. The new approach which is illustrated by Umoja II takes the current shelter challenges further into allowing the government take the role of an enabler and facilitator of informal and private housing production process.

Umoja II lacks the openess apparent in either Bahati or Uhuru Estates. Developed at a density of 163 units to the acre, it means that the open spaces are fairly low. The scheme has two sets of open spaces. One set of 6 measures 43 x 35m and a second set of 13 measures 43 x 15m. The nursery schools take up an area of 39 x 49 m while the primary schools cover an area of 130 x 100m (1.5ha.).



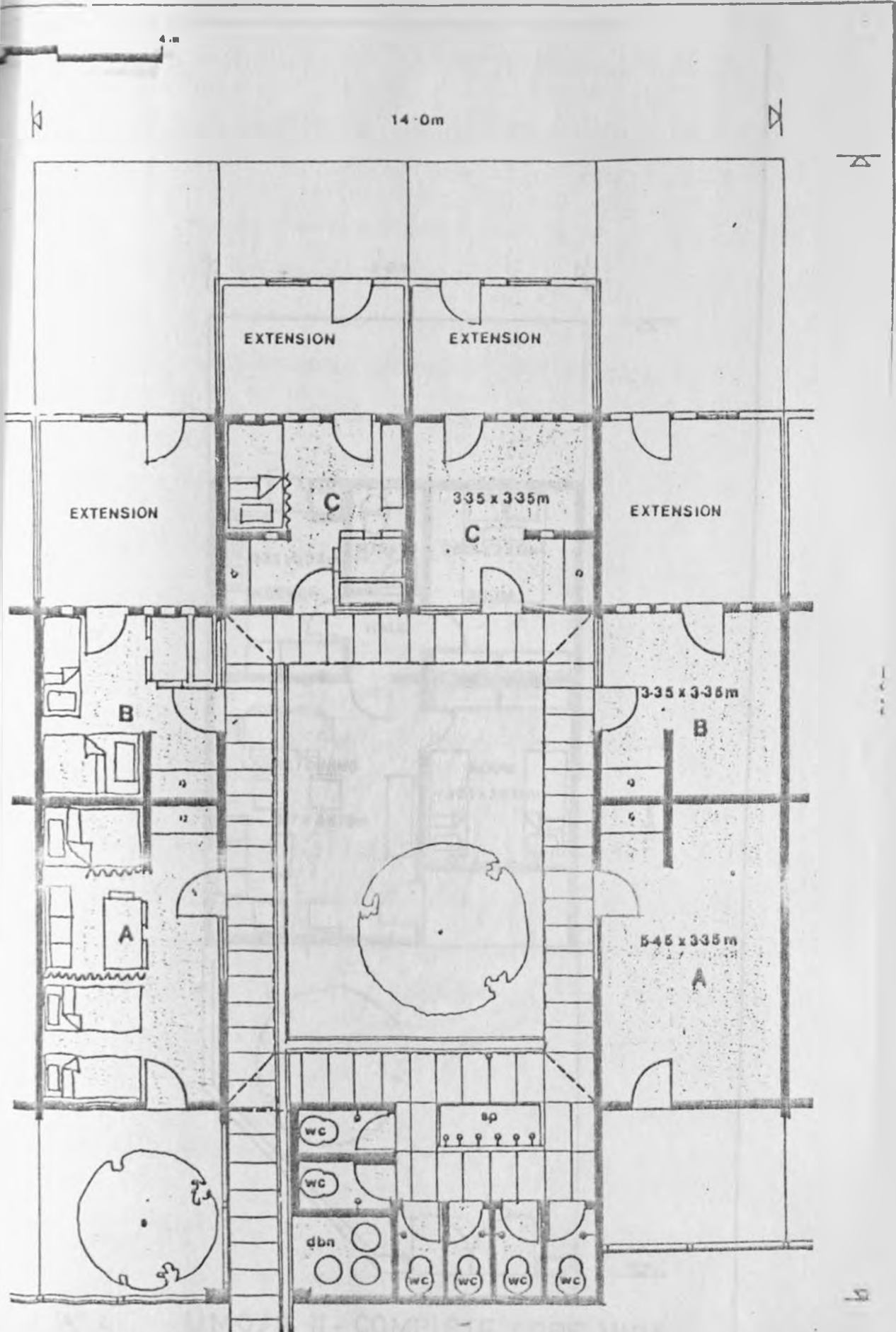


Figure 13: UMOJA II - CONDOMINIUM TYPE 1 (6 Units) Source: USAI.

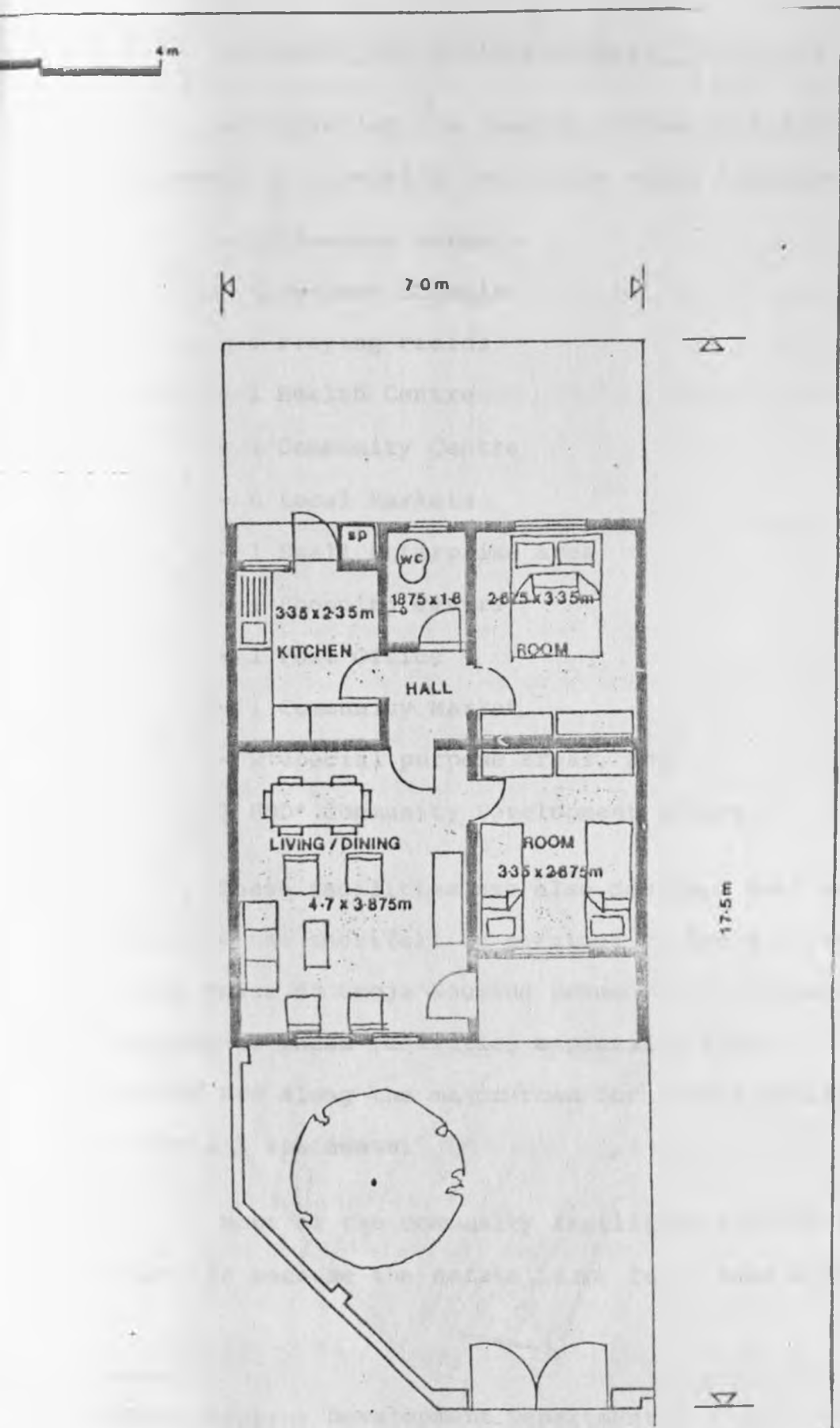


Figure 14 : UMOJA II - COMPLETE CORE UNIT

3.2.13 Community and Infrastructural Facilities

Accompanying the housing scheme is a full complement of community facilities which includes:-

- 10 Nursery Schools
- 4, Primary Schools
- 4 Playing Fields
- 1 Health Centre
- 1 Community Centre
- 6 Local Markets
- 1 Small Enterprise area
- 1 Shopping Centre
- 1 Post Office
- 1 Community Market
- 2 special purpose areas, and
- 1 HDD* Community Development Office

These facilities are also designed such as to alleviate the shortfall in services to Umoja I residents (First Phase of Umoja Housing Scheme). For that reason, location of these facilities especially the schools are along the major road for accessibility by Umoja I residents.

Most of the community facilities are not in operation because the estate is not fully developed or

*HDD - Housing Development Department.

occupied. For instance, out of the 10 nur schools, provided in the plan, only two are functional, leaving a big leeway for private provisions of these facilities by changing the units into nursery school classrooms. Similarly there is no local market that is in operation. Consequently, several makeshift kiosks have emerged to cater for the residents' shopping needs which cannot be fully satisfied by the small number of operating corner shops.

Major infrastructural facilities like sewers, roads, lighting and water are provided, except for electricity which has not yet been connected to the individual units. So far lighting is provided for street security. Overall, as a site and service scheme, in terms of basic infrastructure, Umoja II is fully serviced.

3.2.14. Summary

In this chapter, environmental and physical limitations of Eastlands has been underscored, which qualifies the reigon for a future rational planning in terms of recreation and open spaces. Besides environmental limitations, it has also been found out that housing structures and population dynamics aggrivate the situation due to high development densities, overcrowding in the units and low income levels.

Investigation of each estate has been established, which points to the changing planning priorities and approaches for low income residential estates on the part of the planners, and these variations are reflected on the design and alignment of open spaces for these estates under study.

CHAPTER FOUR

4.0 DATA ANALYSIS AND INTERPRETATION

4.1 Introduction

The data obtained was analysed qualitatively. However, only household information was subjected to this test. Conversely only Key variables relevant to the research hypothesis were subjected to Chi-square test. Other supportive information was analysed by use of graphs, proportions and field observation.

The key variables were:

- (a) House tenure system.
- (b) Employment and income patterns.
- (c) Surface drainage and solid waste disposal.
- (d) Landscaping/tree planting performance.
- (e) Length of stay in Nairobi and residential estates.

The following supportive data was considered:

- (a) Climatic discomfort due to sun heat and wind
- (b) Purchase of seedlings by residents,
- (c) Level of social organisation.
- (d) Actual and intended use of public open spaces and

- (e) Alternative disposal method for solid waste.

4.2 Tenure of Occupancy

To be able to live in a place for as long as one wishes without fear of evacuation is significant, and points out how a person responds and interpretes the space around himself.

Chi-Square calculations between tenure of occupancy and particular estate revealed the following:

Estate Tenure	Umoja II	Uhuru	Bahati	Totals
Owner	11	4	0	15
Tenant	20	26	31	77
Totals	31	30	31	92

TABLE 8 : Observed Frequency Table

Source: Field Survey

Estate Tenure	Umoja II	Uhuru	Bahati	Totals
Owner	5.05	4.89	5.05	15
Tenant	25.95	25.11	25.95	77
Total	13	30	37	92

TABLE 9 : Expected Frequency

Source: Field Survey

Therefore:

$$\chi^2_c = 14.59 \text{ (computed Chi-square)}$$

and $\chi^2_{d.f} = 2 (\alpha = 0.05) = 5.99 \text{ (Tabulated Chi-square)}$

now $\chi^2_c > \chi^2_{d.f} (\alpha = 0.05)$

i.e. $14.59 > 5.99$

The null hypothesis of independence, that there is no association between types of tenure and residential estates was rejected.

From the analysis, tenure of occupancy is dependent on estate. The implications of these different tenure patterns are reflected on how residents have interpreted the space around their dwelling units. Taking Uhuru for instance, the manner of fencing varies according to the tenure patterns.

In tenant purchase units as in the case of Uhuru Phase 3, fencing demonstrates a desire for privacy. In Phase 2 which is rental and owned by the City Commission, fencing is absent as individuals have not identified themselves with the units. This difference in appreciation of space is shown in Plate I.

Similarly, when tenure is individual or permanent, residents embark on permanent developments like stone walls and heavy gates. Conversely, If residents in such tenure have not undertaken to permanent development the aesthetic value of the courtyard is enhanced as shown in plate 2.



Plate I: Space differences in Uhuru Phase 2 (left) and Uhuru Phase 3 (right).



Plate 2: A typical private yard in Uhuru Phase 3 (tenant Purchase).

In rental schemes where the city authority is the sole maintainer and provider of services (such as Bahati) efforts by residents to improve the housing area are minimal (see Plate 3).

However, where residents have taken to the improvement of the housing area in Bahati, symbolic fencing has been undertaken, as illustrated by Plate 4.



Plate 3: Bahati rental, no efforts made to plant flowers



Plate 4: Symbolic space identification in Bahati

Emerging from this observation there is an indication that tenure of occupancy dictates privacy and determines individual response to use of open space.

Employment Patterns and Incomes

Survey on employment patterns and income levels, after subjecting the data to Chi-square test, issued the statistic below:

<u>Estate</u> <u>Formal Employment</u>	Umoja II	Uhuru	Bahati	Totals
Public sector	10	7	2	19
Private Sector	15	11	8	24
Informal Sector	3	1	1	5
Others	13	11	20	44
Totals	31	30	31	92

TABLE 10 : Observed Frequency

Source: Field Survey

<u>Estate</u> <u>Formal Employment</u>	Umoja II	Uhuru	Bahati	Totals
Public sector	6.4	6.2	6.4	19
Private Sector	8.09	7.83	8.09	24
Informal Sector	1.68	1.63	1.68	5
Others	14.83	14.35	1483	44
Totals	31	30	31	92

TABLE 11 : EXPECTED Frequency

Source: Fiedl Survey

Therefore:

$$\chi^2_c = 11.98 \text{ (calculated Chi-Square)}$$

and $\chi^2_{d.f} (\alpha = 0.05) = 12.59$

now, $\chi^2_c < \chi^2_{d.f} (\alpha = 0.05)$

i.e. $11.98 < 12.59$

Therefore, the hypothesis of independence (H_0) that there is no association between sector of employment and residential estates, is accepted.

There is a fair distribution of employment by sector among the three estates. As low income estates, the population is engaged on all types of employment activities.

However, calculations regarding household incomes pointed to internal variations in the three estates, and Chi-Square calculations are as follows:

Income levels

Average income p.m. \ Estates	Umoja II	Uhuru	Bahati	Totals
<2000	2	9	14	25
2000-4000	21	13	12	46
>4001	7	8	5	20
Totals	30	30	31	91

TABLE 12 : Observed Frequency

Source: Field Survey

p.m. = per month

Average income p.m. \ Estates	Umoja II	Uhuru	Bahati	Totals
<2000	8.06	8.06	8.87	25
2001-4000	15.49	15.48	17.03	46
>4000	6.48	6.45	7.1	20
Totals	30	30	31	91

TABLE 13. Expected Frequency

Source: Field Survey

p.m. = per month

Therefore:

$$\chi^2_c = 11.57 \text{ (calculated Chi-square)}$$

$$\text{and } \chi^2_{d.f} = 4 (\alpha = 0.05) = 9.48$$

$$\text{Now, } \chi^2_c > \chi^2_{d.f} (\alpha = 0.05)$$

$$\text{i.e. } 11.57 > 9.48$$

The hypothesis of independence is rejected (H_0) and therefore acceptance of (H_A) that there is a relationship between household income levels and residential estates is taken.

Variations in income levels and employment patterns are reflected on the actual and desired use of open spaces in the three estates. Petty business, farming, hawking charcoal business as well as timber works and so forth, find their location in public open spaces (See plate 5). In Bahati for instance, the number of kiosks is noted by the City Inspectorate Department as out numbering units themselves.

This phenomenon is partly explained by the city authority as resulting from the nature of residents in Bahati, whose majority are old and retired and so they cannot be engaged in any other income generating activity other than in operation of kiosks at their door steps in order to meet their house rents and other bills.

Secondly, the city authority also recognises the faulty location of shopping facilities in the initial planning of the estate (Refer to Section 3.2.5). However, even adjacent to these shopping centres are kiosks. This has happened because most of the shops have been turned to bars which serve a restricted category of clients.



Plate 5: Bahati Estate; Kiosk, Charcoal Stall and furniture making on a public open space.

In Uhuru, although kiosks have not emerged in significant numbers, people have used both private and public open spaces to put either a house extension or informal activities. In private yards where house owners cannot put up a house extension due to financial limitations, some households have embarked on such activities as waste paper scavenging which is temporarily stored in the yard while awaiting to be sold, and where the City Commission cannot interfere with it (See Plate 6).

This category of residents consist of early occupants who managed to purchase the unit from the city authority, and are now retired without a source of regular income. It has earlier been mentioned (Section 3.2.6) that the estate, upon development offered two types of tenure: rental and tenant purchase. This was designed to experiment on the attitude of Africans towards an urban home ownership.

Like in Bahati Estate, public open spaces in Uhuru have also been symbolically fenced to provide privacy and allow residents undertake their business close to their dwelling units with minimal external interference. Such symbolic fencing is typical of rental units in the estate (Plate 7).

In Umoja II, the situation is peculiar, partly because of the age of the estate and employment pattern



Plate 6: Uhuru Estate: A private yard used for temporal storage of waste paper.



plate 7: Symbolic fencing in Uhuru to provide privacy for leather works.

of the residents. Most of informal business on public open spaces are carried out by non residents. The most common of these activities include, charcoal selling, makeshift kiosks, storage of building material.

An interview with one of the Charcoal vendors revealed that he travelled daily from southlands (Otiende) to Umoja II to carry out his business.

Non residents carryout, their sales (business) in Umoja II since most of the residents are new in the estate and cannot obtain their lower order goods from within the estate as most of the shopping facilities provided in the plan are non-functional or not ready for public use (See Plate 8).



Plate 8: Make shift Kiosks in Umoja II.

Closely related to employment patterns is the level of household income. Average household incomes was obtained by extracting information on major household expenditures like food, school fees, rent/mortgage, and monthly bills. In the light of financial constraints partly exemplified by poor employment some households have embarked on other ways in which to supplement the household needs.

The variations in income levels were further reflected on actual and desired use of both public open spaces in the three estates.

From the sample survey, 26 respondents confirmed having planted some vegetation in their private yard. Table ¹⁴ shows the reasons for undertaking such planting.

Reasons for planting	No. of responses	% of responses
For household consumption	16	61.5
For beauty	7	26.9
For sale	3	11.6
Totals	26	100.0

TABLE 14: Reasons given for cultivating on private yard.

Source: Field Survey

A follow up question on whether residents would like a plot allocated officially to them within the estate, had 69 respondents in favour of the matter. The reasons given for undertaking the cultivation varied between household consumption sale and beauty (See Table 15).

Reasons given	No. of responses	% of responses
For household consumption	77	83.6
For sale	7	7.6
For beauty	8	8.8
Totals	92	100.0

TABLE 15: Reasons given for cultivating a plot officially allocated to residents

Source: Field Survey.

From this observation, cultivation to supplement household food needs is most significant and a good reason as to why both private and public open spaces are turned into small gardens. However, most of the residents in favour of cultivation of such plot for sale of crop were mainly Bahati residents.

This response expressed by Bahati residents correlates to an earlier observation in which, since most households are not family units, then food pressure

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may not be a felt need as compared to cash due to low employment levels (Refer to Section 3.2.3).

Field observation also confirmed that most of the open spaces are used for growing sweet potatoes, a type of species used as a fodder crop rather than for human consumption (See Plate 9). A further discussion with the residents on the use of this type of crop, confirmed that livestock keepers in Nairobi's armland (mainly from Kiambu, Ngong and parts of Nairobi like Karen and Langata) are the major buyers of the crop for their livestock.

Secondly since the plant sprouts very fast and hardly grows into dangerous bush, the City Commission Officers find no reason for prohibiting residents against the cultivation of the crop and also because it is a constant source of cash to the owners.



Plate 9: A typical sweet potato species used for fodder.



Plate 10: Goat Keeping a source of cash to owners in Bahati.



Plate 11: Poultry and rabbits for household consumption Uhuru Estate.

The desire to supplement household food and cash requirements are not expressed only in the form of crop cultivation. Livestock keeping is also part of it. In Bahati, goats are kept for sale while in Uhuru, animals like rabbits are just a source of protein for the household (Plate 10 and 11).

On what residents would wish to do on public open space if unrestricted, (things they were not doing at the time of research) the following type of responses were obtained (Table 16.)

Type of responses	No. of responses	%
Construct a kiosk	21	41.2
Put up a house extension	6	11.8
Crop cultivation	11	21.6
Informal business	1	1.9
Resting	2	3.9
Car park	3	5.9
No development desired	7	13.7
Total	51	100.0

TABLE 16: Desired use of public open space

Source: Field Survey

From the 51 respondents who answered this question, it can be seen that even the desired use of public open spaces revolves around improving the residents income and supplementing household food requirements. Recreation per se may not be a basic priority in the face of these two problems encountered by low income earners.

From the foregoing analysis, the hypothesis that low income residents are no longer interested with conventional recreational facilities provided for through neighbourhood planning is acceptable. In the face of these basic problems (food and income), the residents priorities are focused upon addressing these problems.

Landscaping/Tree Planting

Landscaping of open spaces which also is the selection of appropriate plants (seedlings) is the sole responsibility of the City Commission (refer to Section 3.1.2)

On the other hand, the success of landscape efforts depend largely on the users of such facilities. This means that the care and maintenance of the whole housing environment depends largely on the residents positive commitment to such facilities.

From the field survey, it has been observed earlier that residents of Uhuru, Bahati and Umoja II have

undertaken to plant trees and other forms of vegetation in their estates although the purpose for such actions are varied. A question on whether residents would buy seedlings from within a walking distance, gave a positive impression. Chi-Square statistic regarding this view and residential estates gave an independent association, indicating that these views were similar among the residents despite their residential areas.

Estate willing- ness to pur- chase seedlings	Umoja II	Uhuru	Bahati	Totals
Yes	17	17	25	59
No	14	15	6	33
Total	31	30	31	92

TABLE 17: Observed Frequency

Source: Field Survey

Estate Willing- ness to pur- chase seedlings	Umoja II	Uhuru	Bahati	Totals
Yes	19.88	19.24	19.88	59
No	11.12	11.76	11.12	33
Total	31	30	31	92

TABLE 18 : Expected Frequency

Source: Field Survey

Therefore:

$$\chi^2_c = 5.56 \text{ (Calculated Chi-square)}$$

and $\chi^2_{d.f} = 4 (\alpha = 0.05) = 5.99$

Now, $\chi^2_c < \chi^2_{d.f} (\alpha = 0.05)$

i.e. $5.56 < 5.99$

The hypothesis of independence (H_0) is accepted, that there is no association between residential areas and residents willingness to purchase seedlings offered at walking distance. The statistics therefore show that residents of Uhuru, Bahati and Umoja II were willing to undertake tree planting if these facilities were near their areas of residence.

A follow up question on what type of seedlings or trees residents are willing to purchase had the following responses as shown in figure 15

Preference for types of trees and shrubs that residents would wish to plant is also expressed by type of seedlings they have actually planted. Bahati residents, _____ have undertaken to plant mostly the fruit trees, some of which are seen in plate 12:

The benefits accruing from planting a fruit tree to residents of Bahati are several; they provide shade, fruits for consumption, as well as, ameliorating the environment.

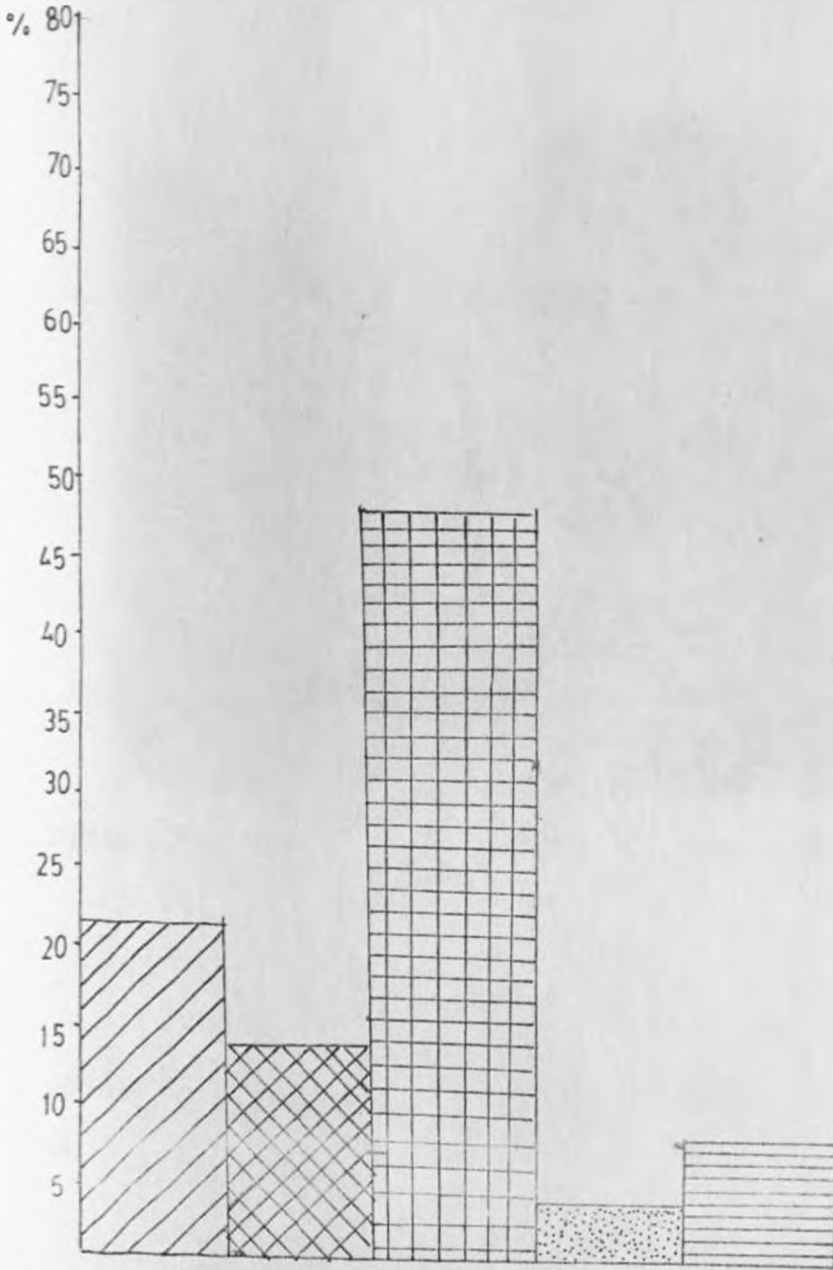


Fig. 15. Preferences for Trees/Shrubs

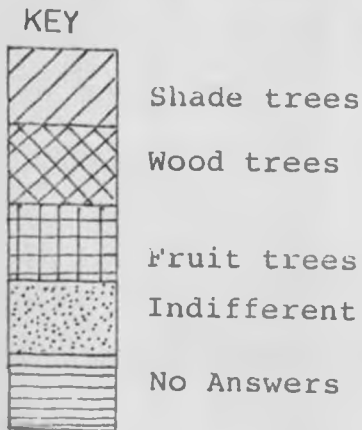




Plate 12: Bahati: Common fruit trees (Paw paws, oranges and avocado).

When plant species are selected with residents preference in mind, the survival rates of such plants is higher.

The landscaping of Umoja II is one which has tried to underscore this aspect in the initial planning stage of the estate. A wide variety of fruit trees were recommended by the Planner, and the actual implementation can be said to be a success. This view was also reinforced by City Commission Landscape Section in the Department of City Planning and Architecture. Besides, the Planners took into account the hot climate of Umoja II,

and recommended plants that would provide with shade. The creeping nature of Mulberry bushes was a commendable choice. Though full development of this plant has not so far been realised, the expectations of the planner in Umoja II are likely to be realised (See Plate 13).



Plate 13: Mulberry bushes to provide a cooling effect on house roofs in Umoja II.

Within the Condominium courtyard, a wide variety of fruit trees have been planted, these include orange trees, guavers, and avocados. Residents have taken to their maintenance fairly well. Off-plot paw paws are on

the major open spaces have also been planted in Clusters, while unit fences for Core-units are provided by a combination of Kai apple and passion fruit. This is designed as a protective measure against destruction by children (See Plate 14 & 15).

In Uhuru Estate, tree planting is common in tenant purchase schemes particularly in Phase 3 (See Plate 16). But In City Commission rental houses, this phenomenon is not common.

On the question of who should take care of the seedlings if purchased, 83% of respondent who expressed a willingness to purchase seedlings, (59) noted that they (respondents) would take care of the seedlings. A small proportion 10.1% mentioned that house keepers (maids) would do so, while none mentioned the City Commission.

From the foregoing it is clear that there is a potential of involving the low income residents of Bahati, Uhuru and Umoja II in landscaping and improve the greenery of their housing area which currently appears too bare to offer recreational incentives. Conversely, availability of such plants/seedlings within a walking distance and at reasonable price is necessary.

However, the expressed potential may go along way before it is fully realised by the city authority because of the current landscaping institutional bottlenecks in policy guidelines and the enforcement of the related by-laws.



Plate 14: A well tended guaver fruit tree within a condominium courtyard.



Plate 15: A thick fence of Kai apple and passion fruit on core-unit plots



Plate 16: Uhuru Phase 3: Individual tree planting, a feature rare in other rental units.

One of the major limitations in the whole field of landscape design in the City Commission lies on the departmentalization of two related sections in this field. The section of landscape design is under the City Planning and Architecture, while the section of City Parks, is under the City Engineers Department. In interpreting and implementation of landscape policies, these two sections need to work as one unit preferably under the Department of City Planning and Architecture. These two sections hardly consult each other in the implementation of such policies. The superintendent of parks confirmed that his section hardly consults the landscape professionals in City Planning and Architecture, and therefore they

(City Parks) undertakes tree planting on the basis of 'experience' rather than on professional guidelines. The results of such planting exercise is the selection of tree species^{that}/are not in line with the preferences of the users (residents) thus the subsequent negligence and vandalism.

Secondly, accessibility by residents in the study area to city park nurseries is difficult. The major tree nursery is located on Limuru road where accessibility is limited to the car owning population, and this factor rules out most of the residents in the study estates. On the other hand, local chiefs do distribute seedlings to residents during the National tree planting days. This cannot be enough effort if tree planting is expected to be a success.

Thirdly, for those zones that the developer has handed in the management and provision of services to the City Commission in Umoja II; monitoring of the planted tree is never carried out. The city authority has never done the replacement of dead plants in these areas.

The above analysis points to the institutional limitations in enhancing the landscaped environment in residential estates beside lack of official efforts in harnessing the existing potential of involving residents of these estate in tree planting and maintenance of such

facilities.

This goes further to reject the first hypothesis that low level provision and management of open spaces is not the cause of negative attitude towards these facilities by the residents.

Site Planning

Related to the phenomenon of landscaping is the whole field of site planning which comes at the initial stages of project planning. As observed in chapter 3 (3.1) Eastlands, region is commonly referred to as a "Heat Island" of Nairobi. It is characterised by deep black cotton soil, which are unsuitable for construction purposes, unless after deep excavation is undertaken. Site for dumping of such soil has to be decided in the course of site planning of the scheme.

Umoja II particularly falls short of this exercise, and the repercussion of this half hearted approach has been seen most on open space management. To avoid cost on transportation and subsequent dumping of the excavated black cotton soil, the developers of Umoja II, dumped the soils along the road reserves under the justification that such mounds would act as sound breakers.

While this was a noble idea in itself, such dumping should have been followed by planting protective vegetation

cover on the soil to avoid soil slumps. Failure to undertake this has resulted in the infilling of open drains by slipping soil from the mounds and also from playing children who have found a favourable play facility (See Plate 17).



Plate 17: Umoja II: Bare soil mound, constantly blocks the open drain.

On the other hand, plot owners who are currently very busy in completing their house extension, are confronted with the similar problem of black cotton soils since they cannot incur heavy costs in transporting such soils to the preferred sites. These developers find a suitable dumping site on open spaces, particularly the spaces left for the development of community facilities so far undeveloped.

When this soil is dumped in such places, given the flat nature of the environment, wind eventually blows it towards the houses, hence a source of discomfort for even the users of open spaces. An analysis of wind discomfort on the three estates did not however reveal any difference in effect. Chi-square calculations illustrates this.

Estate Wind problem	Umoja II	Uhuru	Bahati	Total
Yes	23	18	17	58
No	8	12	14	34
Total	31	30	31	94

TABLE 19: Observed Frequency

Source: Field Survey

Estate Wind problem	Umoja II	Uhuru	Bahati	Total
Yes	19.25	18.63	19.25	58
No	11.75	11.37	11.75	34
Total	31	30	31	92

TABLE 20: Expected Frequency

Source: Field Survey

Therefore:

$$\chi^2_c = 3.73 \text{ (calculated Chi-square)}$$

and $\chi^2_{d.f} = 3(\alpha = 0.05) = 7.85$

now, $\chi^2_c < \chi^2_{d.f} (\alpha = 0.05)$

i.e. $3.73 < 7.85$

The hypothesis of independence (H_0) is accepted, that wind discomfort is not dependent on residential area; rather, it is a common phenomenon or ^aview expressed by residents. Wind discomfort in these estates was noted for banging windows and doors besides blowing dust into the houses.

The other form of climatic discomfort was due to high temperatures during the day and very low temperatures at night. While this may point to poor choice of roofing material given such a hostile environment, the situation would have been improved by rigorous tree planting in the estate. To achieve this, it means landscaping and tree planting should have preceded everything else, so that at the stage of occupation of the units trees would have been big enough to counter heat and wind problem.

In Umoja II the opposite was done, in which landscaping and tree planting came after occupation of estate by residents, thus lowering the survival rate of the young plants, and subsequent climatic discomfort.

So far, limitations in site planning clearly point out that management issues are crucial in determining the final attitude that residents develop towards the open spaces. This further rejects the former hypothesis stated in the study

Surface drainage and solid waste disposal

The nature of surface drainage consequently determines residents perception of open spaces. The foul nature of Nairobi river for instance, has rendered it useless as a recreation site for Nairobi. Consequently, if open drains are filthy, it is unlikely that people will want to recreate on areas close to them. Normally, open drains are designed such that they cut across or are adjacent to an open space.

Asked about their views regarding open drainage in their estate, the observation gave a Chi-square statistic of an independence relationship. The calculations below illustrates this.

Estate drainage being a problem	Umoja II	Uhuru	Bahati	Total
Yes	14	12	13	39
No	16	18	2	47
Total	31	30	20	81

TABLE 21: Observed Frequency

Source: Field Survey

Estate Drainage being a problem	Umoja II	Uhuru	Bahati	Total
Yes	14.93	14.44	9.63	39
No	16.07	15.56	10.37	42
Total	31	30	20	81

TABLE 22: Expected Frequency

Source: Field Survey

Therefore,

$$\chi^2_c = 3.18 \text{ (calculated Chi-square)}$$

and $\chi^2_{d.f} = 2 (\alpha = 0.05) = 5.99$ (tabulated Chi-square)

now, $\chi^2_c < \chi^2_{d.f} (\alpha = 0.05)$

i.e. $3.18 < 5.99$.

The ~~hypothesis~~ hypothesis of independence (H_0) that there is no association regarding residents view on surface drainage and residential estates is accepted. This denotes that drainage is a common problem and not dependent on residential areas in the three estates under study.

Negligence of maintenance is a common feature which makes these facilities clogged and finally the foul smell. In Umoja II, residents noted that since the estate was developed, there has not been any attempt by the City Commission to clean up the drains. Thus, most of the drains are over grown with bush beyond any level

of recognition. During rainy seasons the storm water cannot drain into them and therefore flooding the road and foot paths (See Plate 18).



Plate 18: An open drain covered by a thick bush in Umoja II

Soil mounds along the road reserves also contribute to the clogging of open drains in Umoja II as seen in Plate 18.

Unlike in Umoja II, in the other two estates, Bahati and Uhuru, the problem of surface drainage is mostly due to uncollected garbage. When garbage piles up, scavenger and wind scatter the litter into the open drains which eventually clogg up, and provide ample bleeding grounds for mosquitos,



Plate 19: An open drain blocked by slumping earth mound
in Umoja II.



plate 20: A mosquito control team in Uhuru, a futile
attempt given an alternative bleeding site for
mosquitos (garbage)

The official view regarding the problem of solid waste in the city's low income residential areas is that these residents do not care much about a clean environment, and to remind them of such a need, city authorities have to put sign boards prohibiting residents against dumping.

The above view is rather short sighted because, the city authority seems rather insensitive in appreciating the rate at which garbage is produced, and their relative capacity to handle the same. Conversely, residents in these estates resort to dumping on areas where the City Commission has put the sign board, because the site of the sign board is an indicator that the Commission is aware of the problem, and therefore the probability of collecting the garbage is higher than other site (See Plate 21).



Plate 21: Dumping on illegal sites is not an indicator of being unconscious of a clean environment.

Currently, city residents (of which the study estates are part of) generate over 800 to 1000 tonnes of refuse per day, but the Commission's capacity can collect about 200 tonnes a day, due to breakage of machinery and lack of essential facilities like dust-bins, ground containers and staff to handle the problem.

Asked why they felt that garbage collection was a problem in their estate, the following answers were given as can be seen in Table 16.

Why garbage is a problem	Estate		Umoja II		Uhuru		Bahati		Total	
		%		%		%		%		%
Long delays	21	51.8	12	32.4	4	10.5	37	40.2		
Not collected at all	1	25.0	2	40	2	40	5	5.4		
dumping site too far	1	14.2	2	28.5	4	57.1	7	7.6		
No kitchen dust bins	0	0	9	33.3	18	66.6	27	29.7		
Collection not regular	0	0	3	75	1	25	4	4.3		
No answer	8	66.6	2	16.6	2	16.6	12	13.0		
Total	31		30		31		92	100		

TABLE 23. Reasons as to why garbage is a problem
Source: Field Survey

From the sample survey, the issue of garbage problem is partly explained by long delays, resulting to pilling up and lack of dust bins for household use. Without dustbins residents resort to use of small containers which cannot hold large amounts of rubbish and therefore have to be constantly emptied. Therefore, whether City Commission garbage collection trucks are regular or not, the use of small containers by households will continue to overtake City Commission efforts.

Normally, City Commission kitchen dustbins can hold garbage for a week, hence minimising chances of constant emptying. When small containers are in use, such garbage quite often finds its destination on the roads where it is hoped by residents that the City garbage trucks would notice it and haul it away.

A follow up question intended to find out what alternative residents have after City Commission has failed to collect the garbage and the kitchen containers are shown showed the observations in Table 24

From the survey, one observes that uncollected garbage first finds its way to the public open spaces before it is set a flame by residents, while the third alternative is to continue dumping on provided site/areas.

Either of the methods resorted to cause air pollution, in form of smoke from burning rubbish and foul smell from rotting spillage of garbage

Against this background,

Estates Alter- natives after bins are full	Umoja		Uhuru		Bahati		Total	
		%		%		%		%
Continue dump- ing on provided areas	22	85.7	2	14.4	0	0	14	15.2
Burn rubbish	9	42.9	1	4.8	11	52.4	21	22.8
Dump in public open space	2	6.1	19	52.6	12	36.4	33	35.9
Throw in private open space	0	0	1	50	1	50	2	2.2
No alternative	1	50	1	50	0	0	2	2.2
No answer given	7	35	6	30	7	35	20	21.7
Total	31		30		31		92	100%

TABLE 24: Responses for alternative action when Kitchen dustbins are full.

Source: Field Survey.

it is unlikely that residents would opt to recreate on a foul environment. The public open spaces are an immediate target because these spaces are taken as City Commission property for maintenance purposes.

The problem of garbage collection is not due to residents behaviour per se. City authority institutions that have the responsibility of ensuring garbage is handled

effectively, have their own inherent limitations. As it was observed with landscaping problem, departments that are indirectly or directly involved in solid waste management hardly work in consultation with each other.

In Umoja II for instance, the plan preparation of the estate is noted to have proceeded without due consultation of city officers of relevant departments. Consequently, garbage sites were provided, which today have inhibited the efficiency of cleansing department in this area. The sites for garbage were raised with stone wall, with the initial intention of holding kitchen containers temporarily while garbage awaits the collecting trucks. Since the city cleansing Section cannot keep up with the pace of dustbin demand for the new estates population, especially for large schemes like Umoja, they would have opted for a ground container where residents would empty their kitchen containers, thus making hauling of such material easy.

Unfortunately, the stone walls provide a very small space, which the ground containers cannot fit. Plate 21 shows a typical garbage site in Umoja II. The superintendent of city cleansing section therefore lamented that if these facilities are to be provided the raised walls have to be demolished first. If the department had its views sort before planning for such facilities, this bottleneck would have been resolved.



Plate 22: A typical planned garbage site in Umoja II

The other category of people who contribute significantly to garbage problem in Nairobi are the kiosk operators. Licensing of kiosks in Nairobi is done by the department of City Inspectorate. After licensing, them the licence holders are supposed to be supplied with dustbins by the cleansing section. The latter office is never supplied by the former, with the number of licenced kiosks so as to know the number of dustbins or ground containers required. For food kiosks, the situation is aggravated by lack of proper waste water disposal channels. Such water quite often finds its destination on adjacent open spaces. The problem is mostly felt in Bahati estate where such kiosks are majority.

Although the Public Health Department of the City Commission, is legally required by general nuisance by-laws to bring such defaulters to book, the operations of the department are limited by its own failure to supply the operators with the necessary facilities. Therefore, the situation continues to deteriorate year after year. Hence, city residents particularly residents of Bahati, Umoja II and Uhuru, have to live with the nuisance and inconvenience created by putrifying garbage at their door steps. In such an environment, recreation desires are very much thwarted

Length of stay in Nairobi and

The length of stay in Nairobi as well as a particular estate, determines how an individual perceive the general urban environment level of social organisation and personal experience with City management. Length of individual stay in Nairobi corresponded well with residential areas aof the respondents in the Sample survey. This observation is further illustrated by the Chi-square calculation.

Estate Length of stay in Nairobi	Umoja II	Uhuru	Bahati	Total
Over 25 years	4	5	19	28
Over 15 years	3	11	2	10
Over 10 years	8	9	5	16
Less than 5 years	13	4	4	21
Total	28	29	30	87

TABLE 25: Observed Frequency

Source: Field Survey

Estate Length of stay in Nairobi	Umoja II	Uhuru	Bahati	Total
Over 25 years	9.01	9.33	9.66	28
Over 15 years	5.15	5.33	5.51	16
Over 10 years	7.08	7.33	7.59	22
Less than 5 years	6.76	7	7	21
Total	28	29	30	87

TABLE 26: Expected Values

Source: Field Survey

Therefore,

$$\chi^2_c = 32.8 \text{ (Calculated Chi-square)}$$

$$\text{and } \chi^2_{d.f} = 6 \text{ (} \alpha = 0.05 \text{)} = 12.5$$

$$\text{Now, } \chi^2_c > \chi^2_{d.f} \text{ (} \alpha = 0.05 \text{)}$$

$$\text{i.e. } 32.8 > 12.9$$

The hypothesis of independence, (H_0) is rejected; that there is no association between individual length of stay in Nairobi and residential areas. Therefore, acceptance of the alternative (H_A) hypothesis, that there is an association and that length of stay in Nairobi is dependent of residential estates is made.

This phenomenon is explained by the fact that these estates were developed at different times in history. Bahati, being the earliest has consequently more people who have lived in Nairobi and in the estate for more than 20 years. The observation concurs with an earlier observation in Sect. 3.22 in which Bahati residents were former urban dwellers concentrated in the estate for security purposes by colonial administrators.

The Umoja II situation is a factor of time at which the estate was developed. However, the high proportion of residents who have not spent more than 5 years in the estate indicates the direction in which new migrants in the city are taking in search of shelter. Conversely, it would be expected that, given the fact

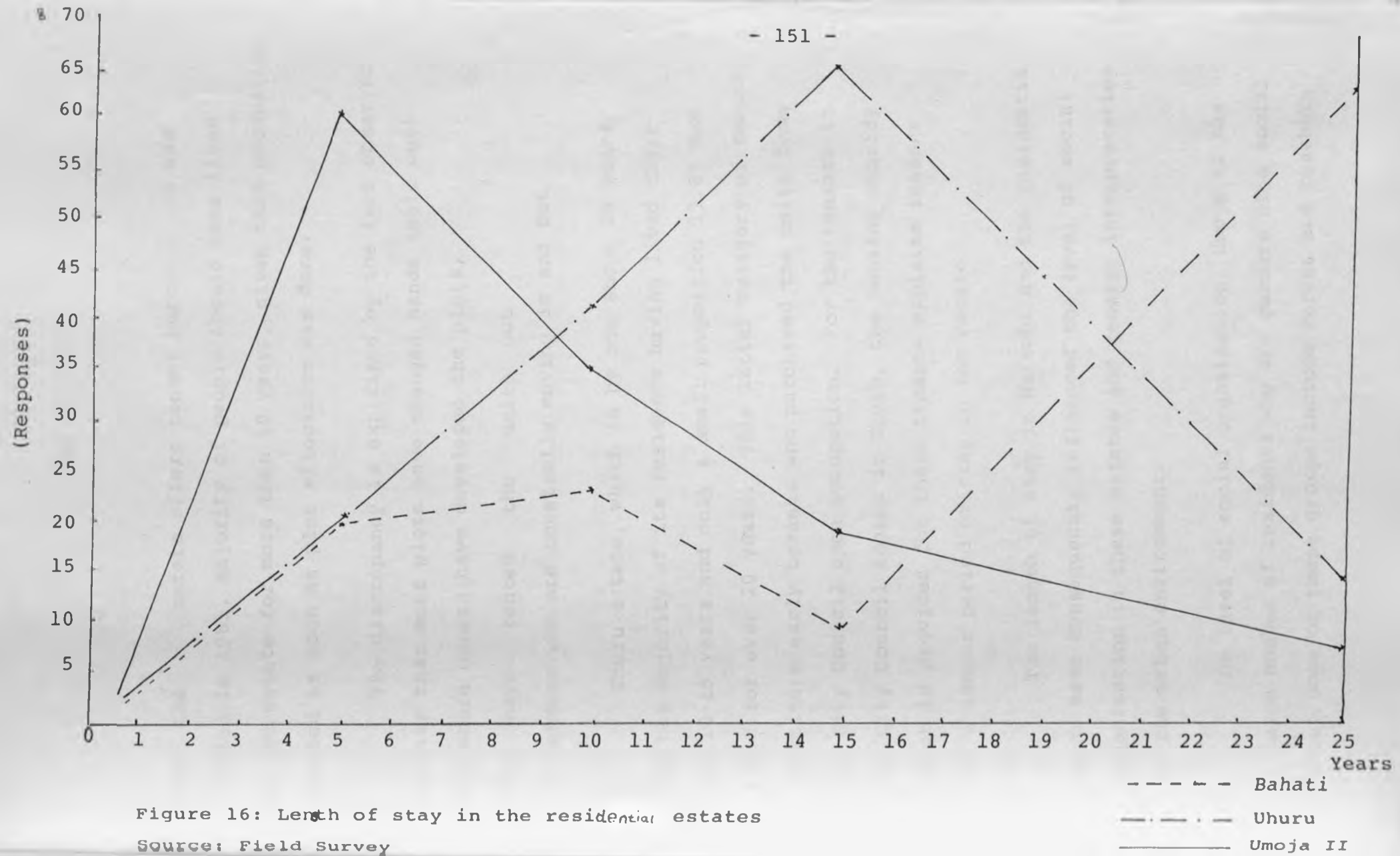


Figure 16: Length of stay in the residential estates

Source: Field Survey

that the estate offers tenant purchase and was started in 1981, majority of people should have lived in the estate for more than 10 years, given that occupation started as soon as plot allocation was done.

The discrepancy is explained by the fact observed earlier that most plots have changed hands (sold out) and where owners have developed the plots, they have rented the units out to tenants who are constantly moving in and out.

Uhuru estate, which is by now about 24 years old has majority of its residents having lived there for 10-15 years and only a small proportion 17.8% has lived for over 20 years. This latter category of tenants constitute early tenants who purchased the units from the City Council upon occupation. For the tenants in the City Council houses in Uhuru, the housing subsidy which is provided for these tenants explains reasons for a longer period of stay in the estate.

The length of stay in Nairobi and the residential areas have consequently influenced the level of social organisation in these estates and general interpretation of the urban environment.

On level of social organisation, Umoja II has a large number of residents who are members of a social group, some of these groups include Parent and Teachers

Association (PTA), women groups, church organisation and other groups at the work place. From the sample survey, out of 42 persons who admitted being members of a social group, Umoja II carried 38.1%, Uhuru 30.9% and Bahati 30.9%.

Though Umoja stands best in this case, membership into a social group is explained by earlier registration into the former places of residence; and therefore, eventual move to Umoja II did not affect group organisation. Besides former plot allottees had to organise themselves into groups in order to complete their units efficiently. After completion of the units, these groups extended into meeting other objectives, like improving the members income levels in order to meet their mortgage payments.

Though the residents of Umoja II belong to social groups, at neighbourhood level, the organisation is minimal since most of the groups are not composed of members in the estate. This observation was further supported by a follow up question intended to find out areas where these groups hold their meetings.

Out of 30 respondents who confirmed that they frequently hold group meetings, 43.3% of Umoja II residents hold their meetings outside the estate while only 16.6% of Bahati residents do so. Overall, Bahati estate had majority of group meeting taking place within the neighbourhood (66.6%) followed by Umoja II (25%).

The forgoing analysis denote that institutional initiatives are crucial in the formation of social organisations, among residents, whether on the basis of employment, PTA or business. This factor explains why majority of residents in Umoja are members of social group, despite their short stay in the estate.

On the contrally, Bahati and Uhuru show less of this. Though residential anonymity is lacking, particularly in Bahati, formal organisational networks are lacking. Lack of latter aspects are dictated by lack of formal employment or business operation, children of school going age to start off PTA (since most household are not family units).

However, the above situation does not mean that residents cannot be involved in such organisations especially those localized at nieghbourhood level. What is important is the institutional initiatives.

The Estate Manager in Uhuru recalled a situation where the estate cleanlinesshard deteriorated so much that, when he officially alerted residents on the matter, and approval of the proposal to involve residents in cleaning the estate by Director of Social Services and housing confirmed the turnout was quite favourable.

The Estate Manager in Bahati also recalled having brought residents to contribute towards replacement of

running water taps with much ease. The same views were shared by the superintendent of city cleansing section (Department of Public Health). He observed that residents who have stayed in an area for some significant length of time, are most susceptible to involve in estate improvement. He recalled incidences where his department led a massive cleaning of Korogocho, (14.2.1989). Pumwani residents undertook the same on 3-10-89, while Kawangware residents cleaned their estate on 18.3.89. No mention of the same was made in Umoja II. The newness of the residents may be an explanatory factor, but much so because their affinity is still outward looking. Therefore, until institutional efforts are made to break the current anonymity and outward looking social organisation, involvement of the latter in Estate matters would remain minimal.

From the proceeding, it is therefore clear that the City Commission has not been able to exploit the existing potential in some areas where residents have developed an inward looking attitude towards their residential area.

Summary

The preceding chapter has dealt on data analysis, under the guidelines of the study hypothesis. Only salient variables as per study hypothesis were subjected to Chi-square test.

From the analysis the following factors worked to reject or accept the study hypothesis.

1. Tenure of occupancy
2. Employment patterns and incomes
3. Landscaping/tree planting
4. Site planning status
5. Surface drainage and solid waste disposal and length of stay in both Nairobi and respective estates.

The analysis revealed that the first two variables, work in support of the hypothesis that low income earners are no longer interested in the conventional facilities provided through neighbourhood planning. Against this hypothesis, it was found out that tenure of occupancy and subsequent desire for privacy, limits individual needs for communal recreational facilities. There is a high tendency towards private open space than for public open space. Employment and income levels also have influenced the intention to which residents of all the three estates would wish to put the open spaces to. The second group of variables point to the management aspects by the city authorities as well as residents level of social organisation in perceiving the problems where these factors have not been undertaken positively through the initiative of city authorities. Residents have lost taste with the facilities provided, and therefore

the negative attitude. Consequently, these factors proceed to reject the former hypothesis that low level provision and management of open spaces is not the cause of the negative attitude towards these facilities by low income residents.

CHAPTER FIVE

5.0 FINDINGS, CONCLUSION AND RECOMMENDATION

5.1 Introduction

In this Chapter, the focus is on the major findings that have emanated from data analysis in Chapter 4. The findings that are thus discussed have been considered on the basis of original study assumptions outlined in Section 1.5. These findings have been underscored considering individual study estates (Uhuru, Bahati and Umoja II) where necessary, and the city as a whole.

The conclusions that have been made by the author relate to the study objectives and the stated study hypotheses for which the data was collected and analysed. The recommendations that are outlined at the end of the Chapter reflect on the use and management of open spaces in the study estates, the Eastlands region of Nairobi and the city as a whole.

Finally, areas that require further research with regard to planning, the use and management of open spaces in the study residential estates and other similar low income residential areas in Nairobi have been indicated.

5.2 Findings

The field survey established a number of findings which influence the use and management of open spaces in Nairobi as well as the Eastlands region and the study residential estates in particular.

1. The existing institutional framework of the City Local Authority has been identified as the major factor responsible for inefficiency and ineffectiveness in City administration and provision of basic services such as collection of domestic solid waste, as well as provision and maintenance of drainage (Section 4.7). Co-ordination of functions between the departments that are directly or indirectly responsible for open space planning and management is lacking.

Also, lack of internal consistency in the function of these departments contribute to the poor performance in open space management in Nairobi City. The main departments responsible for this, such as the City Inspectorate Department, operate as one outonomous unit in the licensing of kiosks. It was found out that land use planning in the study area do not make provisions for kiosk activities. Hence, City Inspectorate Department license kiosks operations and direct their locations on recreation open spaces. In so doing, it was found out that the officers of this department do not consult the

Cleansing Section of Public Health Department which is responsible for garbage collection in the city.

It was also established that Research and Landscape Design Section of City Planning and Architecture Department and City Parks Section of City Engineers Department, do not co-ordinate their activities with regard to landscape policy guidelines.

2. The analysis has also shown that Eastlands residential estates is a region within the city of Nairobi characterized by harsh climatic parameters, for instance high day temperatures, and unbroken winds (given that the region falls within the windward side). These constitute significant environmental parameters that contribute to uncomfortable living environment. The residents of the study area underscored that these factors were responsible for the minimal outdoor use of open spaces for recreation purposes.

3. Residents of Bahati, Uhuru and Umoja II were found to have no kitchen dust bins although a fixed monthly payments of Kshs. 10/- for the facility is charged for each residential unit as part of its water bills. Failure to provide this facility has aggravated the problem of domestic solid waste management, besides the irregular collection pattern by City garbage collection trucks. Hence, it was found

that these two problems left the residents of the study areas with a single option as regards domestic waste disposal; that of dumping it on planned recreation open spaces close to their houses.

4. Residents in the rental housing estates such as Bahati and Uhuru Phases I and 2 misuse and neglect open spaces due to omission of symbolic elements when conceiving the residential housing estate plan. Hence, the residents of these areas could not identify themselves with open spaces in these areas. Moreover, open spaces in these residential areas are either public or semi-privately owned.

In tenant purchase residential estates, for instance Umoja II and Uhuru Phase 3 and 4, it was established that there was no similar misuse of recreation open spaces. This is so because each space is identified with specific housing units. Furthermore, residents in these residential estates have symbolic space boundaries, thus they are defensible territories. This was underscored by field observations which noted that attempts have been made to fence off these open spaces. Such fences are in form of hedges and stone walls (Section 4.2).

5. Cultivation of food crops such as sweet potatoes and vegetables, as well as planting of trees

like orange trees, in public open spaces within the study estates by residents, was found to be a prevalent activity. The food crops are meant to supplement household food requirements while trees are for fruits and shade (Section 4.4).

6. The low income levels and unemployment was established to be the major factor responsible for widespread informal activities like hawking, charcoal business, petty farming and motor garages. All these activities take place on planned recreational open spaces. They were found to be common in Bahati and Umoja II residential housing (Section 4:3).

7. The problem of soil heaps and building material storage in Umoja II, indicates professional negligence in designing comprehensive site planning, by planners during the initial stages of plan preparation for the residential estate. It was noted that the black cotton soil excavated from the site was subsequently dumped by the developer on road reserves. The dumping of this soil was however, not followed up by planting of a vegetation cover to protect the soil from slumping.

Consequently, open drains along the road reserves were found to have continually been blocked by the slumping soil. On the other hand, individual plot

owners have continued to excavate and dump the black cotton soil on the open spaces meant for public facilities such as local markets and shopping centre.

A significant level of social organization meant to assist residents in matters relating to their welfare has been established by estate residents in Umoja II at the time of this study. However, there were no such social organisations among the residents of Bahati and Uhuru estates, although these residential estates were developed fairly early (Section 4.8). For these two residential estates, existence of social organisation was found to be formed on ad hoc basis, depending on whether the respective residents were faced with a crisis. Ceremonial occasions such as World Environment Day is a typical moment when residents of these estates act as organised communities and therefore attempt to clear off garbage dumped in open spaces.

In Umoja II, the situation is different as most residents are permanent members of a social group, though not at neighbourhood level. The residential estate has no venues where such groups can hold their meeting. Most of these groups are church centred, Parents and Teachers Association and social welfare groups which assist their members in the event of a crisis, for instance, in case of death.

Existence of social community organisations in the study estates, was found to be heavily dependent on formal institutional support like the community Development officers (C.D.O.) initiative, and availability of community facilities.

5.3 Conclusion

The study objectives stated in Section 1.2 of this thesis have been successfully achieved as a result of the survey carried out. The field survey established the manner in which different types of open spaces are used by residents. Household interviews as well as field observations were used to confirm this.

In determining the effective way through which neighbourhood open spaces could be made useful elements in residential areas, the study succeeded in obtaining data regarding the actual and desired use of the spaces. This was also established through the study of the behaviour of the residents in the study estates.

Views of officers working in different departments within Nairobi City Authority were also obtained with regard to open space planning and management and they underscored extremely positive and responsive approach in open space planning. In this case, multiple

use of open spaces, as well as appropriate tree planting undertakings were considered important as for the future policies in open space provision and management within the city of Nairobi.

As regards the third objective which was to assist in investigating aspects of community participation in the management of open spaces, exclusive reliance on field data could not achieve this sufficiently. This is because from the initial stages of planning the study residential estates, views of potential residents were not incorporated in the planning of open spaces.

As for Bahati and Uhuru estates, exclusion of community participation is explained by the fact that it was not possible to determine the social and economic characteristics of the occupants in advance. However, a recent study by City Planning and Architecture Department, established that the success of community participation in re-planning the two residential estates could be achieved if a housing redevelopment programme was to be undertaken.

In the case of Umoja II estate, original plot allottees received professional advice from a trained and experienced social worker on how to maintain facilities and open spaces within the precincts of their houses. In giving these services, it was

assumed that the original allottees would not relinquish ownership of their houses through either sale or renting out. This assumption was however found not to hold at the time of this research because while some plots/houses have been resold out, others have been rented out. Hence, in order to achieve the study objective related to community participation in Umoja II estate, an assessment of neighbourhood social groups and community based effort in maintaining the area around dwelling units was considered as a better alternative to achieve this objective.

At data analysis stage the hypothesis that "low provision and management of open spaces in low income residential estates is not the cause of the negative attitude towards these facilities", was rejected while the hypothesis that "low income earners are no longer interested in conventional recreational facilities provided for through neighbourhood planning" was accepted. In the former hypothesis, management related factors such as effective collection of domestic solid waste, landscaping and tree planting performance, as well as maintenance of community recreational facilities reinforced the basis on which this hypothesis was rejected.

The level of open space provision could not be statistically tested in the study estates because at the initial stages of this study, the researcher assumed that originally planned open spaces were undergoing progressive reduction in their original sizes, and that they were therefore comparatively smaller in size than those found in both middle and high income residential areas within the city of Nairobi. The latter hypothesis was supported by two related variables, mainly house tenure system on one hand, and employment patterns and income levels on the other hand (Tables: 3, 4, 5 and 6). Low income levels and the subsequent financial strain detected in the household budget by the researcher conflicted with a desire for privacy where a family can undertake some informal activity. Consequently, these factors contribute to a withdrawal effect on the individual residents from public recreational facilities at neighbourhood level in the study estates.

The major district park in the region of study estates along Nairobi river has been converted into private "shambas" (gardens) by residents of Bahati and Uhuru estates. Secondly, the City Local Authority has never embarked on landscaping of this area for recreational purposes. Besides, the state of the river water is characterized by pollution and foul smell

which as at the time of this study, cannot attract residents from neighbouring areas for recreational purposes even if major efforts were made to invest in landscaping. Therefore, residents of this region, including the study estates, are left with Uhuru and Central Parks as the major public recreational facilities for their use. These parks are located at the city centre, and about 13km from Umoja II estate and 3km from Bahati estate. Public transport costs are Ksh.5 per trip per person from Umoja II estate to these parks. From Bahati and Uhuru estates the cost is Kshs.4 per person per trip. Taking an average family unit of 6 persons for low income areas of Nairobi, and each family would travel to these parks at least four times per month, then, a family would spend an average of Ksh.240 in case of Umoja II, and Kshs.186 in case of Bahati and Uhuru residents. This is an average of 9.3% and 9.6% of household monthly incomes of the respective estates.

5.4 Recommendations

On the basis of the analysis that has been accomplished in Chapter Four of this thesis, findings and conclusions outlined in Sections 5.2 and 5.3, the factors that bear a direct and indirect effects on level of open spaces in low income residential estates in Nairobi are apparent.

Against this background, specific recommendations intended to make the future planning and management of open spaces a positive contribution in low income residential housing estates in Nairobi are outlined below:

1. The organisational structure of Nairobi Local Authority should be such that consultation and co-ordination of duties and functions between and within the various departments is enhanced. In this regard, the autonomous nature of the functioning of City Inspectorate Department particularly in licensing of Kiosks, as well as enforcement of development control by-laws, should not be encouraged. In these two operational areas of the department, City Cleansing Section in the Department of Public Health, and the Development Control and Forward Planning Sections of City Planning and Architecture Department; should be consulted as well as directly involved, if problems discussed earlier in this thesis are to be minimized.

On the other hand, matters regarding the landscaping of recreational open spaces and implementation of policies related to them, should be co-ordinated by a single department, preferably City Planning and Architecture, rather than the case which this study established, where more than one unit (City Parks and Landscape and Design Sections) are ambiguously

responsible. To be more effective, it is recommended that City Parks Section now in City Engineers Department be placed under City Planning and Architecture Department.

2. The development control machinery of the city administration should be made more effective than it was the case at the period of this research, particularly so in tenant purchase residential housing schemes. As for the study estates, this recommendation is important for Umoja II as well as Uhuru Phases 3 and 4. Effective implementation of this recommendation should be focused on the current trend where recreational open spaces and those planned to promote a healthy environment are illegally used by private developers to build house extensions.

3. Site planning for low income residential housing schemes in the Eastlands region of Nairobi City should be comprehensive. This should be done in order to overcome environmental limitations in the urban district discussed in Section 3.1 of this thesis. Whenever such future housing schemes are to be constructed for home ownership, plan approval for such schemes should also be based on a provision for project costs that includes transportation costs for the excavated earth materials, particularly black cotton soil, to specifically designated disposal sites.

This would help to avoid disposal of such soil in planned open spaces, rendering them useless. The implementation of this recommendation would be important to residential housing schemes similar to Umoja II estate, where the phenomenon was found to be most apparent.

4. Landscaping and tree planting exercise in low income residential estates in Eastlands need not be considered as an after thought, and therefore only to be implemented in the final stages of project implementation. The study established this to have been the case with regard to Umoja II estate. This study recommends that open space planning and provisions be incorporated in the plan simultaneously with other indispensable user activities at the initial stages of plan preparation. If success was to be realized through this strategy, it is recommended that a tree nursery be established within the neighbourhood of a residential housing scheme that is under implementation. This should be done as soon as housing development commences in order to avail tree seedlings to the residents as they occupy the new houses.

It is further recommended that this responsibility currently be placed under City Parks Section of Nairobi City Commission, and which has been recommended to be

shifted to City Planning and Architecture Department elsewhere in this thesis.

5. Allocation of plots for informal activities within residential estates is vital. This strategy is most relevant for Bahati estate where about 47% of the residents are either unemployed or under employed (Tables: 5 and 6).

The fact that the Local Authority of Nairobi city intends to carry out a redevelopment programme for Bahati estate starting from June 1989, gives the city planners an opportunity to incorporate this aspect at plan formulation and design stage. This is crucial considering that the residents of the estate at the time of this study were intended to be the beneficiaries of the redevelopment programme underway.

6. Development of community facilities that have so far remained underdeveloped in Umoja II such as community centre, local markets and nursery schools, should be considered as a matter of urgency. Delays in undertaking these development projects with regard to the facilities implies that more soil heaps would continue to be dumped on sites that had been set aside from them in the plan. On the other hand, prolonged absence of

these facilities was found to inhibit the development of emerging social organisations in this estate because of lack of necessary venues where such groups could hold their meetings.

7. The soil mounds along Umoja II road reserves are undesirable features whose removal is necessary for they constantly block the open drains, hence stagnating the flow of storm water, and consequently resulting to the rampant flooding of the residential estate. It is recommended that the site developer be made to undertake this responsibility and preferably dispose the soil in the existing quarry sites at Njiru and Kayole, 3 km east of the estate. Alternatively, the developer should protect soil slumps from these mounds by planting a protective vegetation cover such as grass. It is the authors view that the recommendation be implemented the soonest possible.

8. Multiple use of open spaces in the study estates requires consideration in the light of diminishing land for outdoor recreation. Adoption of this strategy would be realized if the standards for space requirements for a neighbourhood primary school is increased or guarded against any form of encroachment by other user activities. The implementation of this strategy in the study estates will require an effective management

framework in order to control possible causes of vandalism and also maintain a co-ordinated programming of recreational activities in these areas.

On the other hand, design efforts for school layout plans could be done such that the main buildings are separated from recreation open spaces, while access to these open spaces should be controlled through use of gates that could be locked and opened at specific times during the day. Bahati redevelopment proposal has the greatest potential for incorporating this recommendation.

9. Solid waste management and disposal method is a common problem in the study area that require serious considerations. Efficient collection of garbage should be preceded by providing kitchen dust bins to every household. Secondly, regular collection of garbage should be undertaken by the Nairobi City Commission. This recommendation also apply to the entire city of Nairobi and should be implemented immediately.

10. Areas for further research

Policies regarding the use and management of open spaces in Nairobi could be underscored better if a study of the three classes of city residential settlements (low, middle and high income) was carried

out. The current study could not achieve this because of limited time and resources at the disposal of the researcher.

Secondly, data related to demand for recreation facilities and their availability (demand and supply) for Nairobi has not yet been documented so far by any research institution. Therefore, this study could not establish the extent to which the use of recreational open spaces is a function of opportunity available or cost of obtaining these facilities. Further research is necessary so as to assist in understanding the dynamics of emerging urban recreational needs and potential particularly at residential housing estates neighbourhood levels within the city of Nairobi.

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HOUSEHOLD QUESTIONNAIRE

Name of interviewer -----

Interview No. -----

House No. -----

Weather condition on day of interview -----

Head of household (Male, Female) -----

BASIC DATA

1. Are you a tenant or owner of this house?

(a) Tenant

(b) Owner.

2. Up to what level did you reach in school

(a) Finished primary

(b) 'O' level

(c) 'A' level

(d) Post secondary training (specify)

(e) Diploma

(f) University

(g) N/A

3. Are you employed

(a) Yes

(b) No

If yes, in which sector

- (a) Public sector
- (b) Private sector
- (c) Informal sector (specify)

5. What year did you move to Nairobi for the first time? -----

6. Where did you move from? -----

7. When did you move into this estate? -----

8. How many people live with you in this house? -----

9. How many children live with you? Please fill their ages and sexes in the table below:

Age	Sex	
	Male	Female

10. Who looks after the children during the day? -----

11. What is her/his age? -----

HOUSEHOLD EXPENDITURE:

How much of your income do you spend on

- (a) House rent (per month)
- (b) Water bill (per month)
- (c) Electricity bill (per month)

(d) Transport (per month)

(e) Food (per month)

(f) School fees (per term)

WEATHER EFFECTS

TEMPERATURE

1. Does your house become uncomfortable due to the sun heat during the day? -----

(a) Yes

(b) No

2. If yes, what do you do about it? -----

3. Do these other places get uncomfortably hot?

(a) Open space

(b) Street

(c) Market (planned)

(d) Clinic

(e) Church

(f) Hall

(g) Others (specify)

	Yes	No	N/A
(a) Open space			
(b) Street			
(c) Market (planned)			
(d) Clinic			
(e) Church			
(f) Hall			
(g) Others (specify)			

What should be done about this problem? -----

4. Are you using your private yard Yes/No/N/A if yes, What for? -----

5. What would you like to use it for (things you are not doing now) -----
6. Do you use the public open space? Yes/No/N/A if yes, What for? -----
7. What would you like to use it for (things you are not doing now)? -----
8. Why are you not using the public open space as much as you would want to? -----
9. Would you like more plants on:-

	Yes	No	Don't know	N/A
(a) Your plot				
(b) The street				
(c) The estate				

WIND

1. Does the wind blow in the direction of your house?
(a) Yes
(b) No
2. Does the wind cause any discomfort
(a) Yes
(b) No

If yes, what kind of discomfort? -----

Have you tried to do anything about it?

(a) Yes

(b) No

If yes, What? -----

PLANTED VEGETATION

1. Have you planted anything in your private yard?

(a) Yes

(b) No

2. If yes, What? -----

If No, Why not? -----

If Yes, Why? -----

3. Have you planted anything between your house and the road?

(a) Yes ----- What? ----- Why? -----

(b) No ----- Why? -----

4. Do you grow crops anywhere else other than your plot?

(a) Yes

(b) No

(c) N/A

If yes, where? -----

Should residents be allowed to cultivate outside their plots but within the estate

- (a) Yes
- (b) No
- (c) Don't know
- (d) N/A

6. Do any non-residents cultivate within your estate?

- (a) Yes
- (b) No
- (c) N/A
- (d) Don't know.

7. If they have, how do they acquire land for cultivation within the estate? -----

8. Would you like to cultivate some piece of land allotted for the residents of your estate?

- (a) Yes
- (b) No
- (c) N/A
- (d) Don't know

9. For what purpose would you carry out the cultivation

- (a) Sale of crop
- (b) Household consumption
- (c) Beauty
- (d) Don't know.

10. If you could get seedlings of trees and shrubs within walking distance from here,

- would you buy some? -----

- Who should look after them? -----

11. Do you have preference for certain types of trees or shrubs?

If yes, which one? -----

12. Do you know of an Estate where you like the planted vegetation-----

----- where -----

SURFACE DRAINAGE AND FOOTPATHS

1. Does the drainage on your plot cause problems? -----

If yes, what problems -----

2. Have you done anything about the drainage on your plot?

(a) Yes

(b) No

(c) N/A

If yes, What have you done? -----

3. Does storm water flood on the streets?

(a) Yes

(b) No

(c) N/A

If yes, what have you personally done about it? -----

4. Do you have a car?

(a) Yes

(b) No

(c) N/A

If yes, where do you Park it? -----

5. Do you use the planned estate footpath to go to:

	Yes	NO	N/A	Do you use them when they are wet? (Tick)
Bus stop				
Cornershop				
Charcol stall				
Vegetable stall				
Kiosk				
Bar				
Market				
School				
Church				
Friend's house				
Hall				
Other places (specify)				
N/A				

Are the open drains along the roads a problem? -----

If yes. How? -----

SOLID WASTE DISPOSAL

1. How often is your dust bin emptied?

- (a) Twice a week
- (b) Once a week
- (c) Once every 2 weeks
- (d) Once every 3 weeks
- (e) Once every month
- (f) .N/A

2. Is rubbish collection a problem in this Estate

- (a) Yes
- (b) No

If yes, why? -----

3. What do you do when your dustbin is full? -----

4. If a good, safe and clean place were created for garbage dumping, how far would you be willing to go?

- (a) To the nearest open space
- (b) Next to the local street

- (c) End of the street
- (d) Not prepared to go anywhere
- (e) Other place (specify)
- (f) Don't know
- (g) N/A

COMPOUND MAINTENANCE

Who cut the bush/grass around your Estate?

- (a) City Commission workers
- (b) Private persons
- (c) Residents
- (d) Others (specify)

If private person(s) who pays them? -----

2. How often do they come to cut the grass /bush? -----

3. When they come, What other activities do they perform other than bush and grass clearing? -----

COMMUNITY FACILITIES

1. What do you think about the play facilities for you children in this Estate?

- a) Good
- b) Adequate
- c) Marginal
- d) Bad
- (e) N/A

Why do you think so? -----

Do you know of a satisfactory playing ground in any housing Estate in Nairobi?

- (a) Yes
- (b) No
- (c) Don't know

If Yes, where -----

What is good about it? -----

Do you belong to any social organisation (eg. church, welfare association etc.)

- (a) Yes
- (b) No

If yes, where do you hold your meetings in case of need? -----

If outside your estate, why do you meet there? -----

What activities take place within the community centre?

- (a) Cinema shows
- (b) Committee meetings (Estate)
- (c) Indoor games
- (d) Drama classes
- (e) General meetings
- (f) Dances and Ngomas
- (g) Adult literacy courses
- (h) Women group's activities
- (i) Nursery school education
- (j) Others (specify)
- (k) N/A

ESTATE LAYOUT

1. Given a choice, where would you prefer to live
in Nairobi and why? -----

Preference	Reasons
(a) Remain in the same estate	
(b) Move to another estates (Name it)	
(c) Move closer to the Town Centre	
(d) Close to a main highway	
(e) Others (specify)	

4. What should be done to improve your estate environment?

5. In what areas should improvement focus on?

6. If there was need to provide more people with housing in this estate, how and where should the dwellings be put?

(i) ~~abolish~~ existing ones and put up high rise

(ii) Fill in the open spaces with low rise blocks.

(iii) Fill in open spaces with high rise blocks

(iv) No idea

(v) No need for more houses in this Estate

7. Which of the three factors below cause the most inconvenience to the residents of this estate. List them in order of biggest problem areas as No. 1.

(i) ~~Greenery (vegetation)~~

(ii) Wind

(iii) Greenery (vegetation)

(iv) Drains (surface)

(v) Mud

(vi) Estate footpaths

(vii) Soil heaps

(viii) Dust

(i) Community facilities (schools - Clinic etc)

(j) Play facilities

(k) Area for cultivation

(l) Street lighting

(m) Any other (specify)

(n) N/A

6. Would you be willing to be involved in solving these problems? -----

7. Would you be willing to work with other people -----

If yes with whom? -----

8. For an improved/or new estate elsewhere would you be willing to move? -----

Thank you for your co-operation.

Please allow me to have a look at your backyard and front yard?

NAIROBI CITY COMMISSION OFFICIAL QUESTIONNAIRE

NB: Any information provided for this interview will be kept confidential and used for academic purpose only.

GENERAL INFORMATION

Respondents Age -----
Official status -----
Department/Ministry/Section -----
Building -----

1. What level of open spaces in your views should be provided in low income residential areas.

- (a) large
- (b) Small.

(Please give reasons and details of size where possible)

2. Why do old estates like Kaloleni differ in terms of open space spatial organisation and size provision with those of new estates like Umoja? -----

3. What could be done in order to encourage residents to utilize open spaces as originally planned/designed?

(Please give reasons to your answer) -----

4. In your opinion, what makes residents of low income estates use open spaces for dumping and/or farming instead of using them for recreational purpose? -----

5. In your opinion, is it possible to involve low income city residents in planning and management of open spaces in their respective estates? -----

If yes, How? -----

7. What major problem(s) does the City Commission encounter in the maintenance of low income residential open spaces? -----

8. What in your opinion could be done to solve these problems? -----

Is it possible to supply residents in low income residential estates with seedlings to plant? (please explain your answer)

ESTATE SPECIFIC INFORMATION

(a) BAHATI:

1. What factors have been considered to qualify Bahati ready for redevelopment? -----

2. What class of people will be housed in Bahati after redevelopment? -----

3. In your opinion what is the best way to organise the open space in Bahati Estate? (please explain your answer). -----

4. What specific problems does your department/section encounter in the maintenance and/or management of open spaces in Bahati? -----

5. In your view, is it possible to involve Bahati residents in the improvement of their housing environment?

- (a) Yes
- (b) No

(Please explain your answer) -----

6. Have the residents of Bahati made any efforts towards the improvement of their housing environment in the following areas:

- (a) Surface drainage
- (b) Refuse disposal
- (c) Cutting grass/bush
- (d) Repainting the houses
- (e) Planting vegetation
- (f) Others (specify)

(B) UHURU ESTATE

1. Is the 1967 Uhuru plan (original) still the operational plan currently in terms of open space provision?

- (a) Yes
- (b) No

If No, What changes have taken place? -----

2. In your views, is it possible to involve residents of Uhuru in the improvement of their housing environment?

- (a) Yes
- (b) No

If yes, What is the best way to approach it? -----

3. What specific problems does your department/section face in the maintenance and/or management of open spaces in Uhuru Estate? -----

4. Have the residents of Uhuru made any efforts towards the improvement of their housing environment in the following areas:

- (a) Surface drainage
- (b) Refuse disposal
- (c) Cutting grass/bush
- (d) Repainting the houses
- (e) Planting vegetation
- (f) Others (specify)

UMOJA II

1. Who is responsible for the maintenance of the courtyard
in condominium Houses in Umoja II? -----

2. In the planning stage of Umoja II was landscaping taken
into account?

(a) Yes

(b) No

If yes, how successful has this aspect been in the project
implementation? -----

3. How often is garbage collected in Umoja II? -----

4. What causes delays in household dustbin emptying by city
cleansing department in Umoja II? -----

5. How many trucks visit a single refuse collection point in
Umoja II on a collection day? -----

Thank you for your co-operation.