

# BURUBURU HOUSING PROJECT:

A Post Occupancy Evaluation Study

by

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Declaration

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(This project report has been submitted for examination with our approval as the university supervisors.)

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Mr. Kigara Kamweru (Acting Chairman, Department of Architecture and Building Science)



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I would like to thank my supervisor Prof. J Magutu who has been extremely patient and encouraging. He has inspired me intellectually and supported me morally. Through his inputs, I have been able to complete this report.

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## Dedication

This study is dedicated to my wife, my best friend  
Nancy Jebet.

## ABSTRACT

Since Kenya gained its independence in 1963, new residential-estates and renovations have been planned, designed constructed and occupied. Yet, to date, very few of these developments have been evaluated against the housing needs of residents and developers to avoid replicating past mistakes or improve on successful projects. There is no official requirement to evaluate the projects against user needs. The designer it has been assumed knows what the client needs. Though Post Occupancy Evaluation (POE) has nearly a forty-year history, in Kenya it has not been widely practiced and welcomed. This study seeks to explore the correlation between design shortcomings and the changes and extensions done by the residents of Buruburu estate. It is a post occupancy survey of the estate investigating the success of the original intentions of the design team against the present situation on the ground. The author has endeavored to identify and isolate the spatial and physical changes made by the users through empirical studies, observations and personal interviews with the residents. A literature review of the current developments in Post Occupancy Evaluation has formed the framework under which the research has been carried out. The author recognizes the invaluable contributions of influential critics' such as Wolfgang F.E. Preisler, C.C. Marcus, Alice Coleman, Oscar Newman, and J F Turner and selectively applies most of their ideas in the assessment of the project. Buruburu estate is one of the earliest and largest estates in Kenya allowing for a wide variety in study. The project architects; MMI have been singled out for scrutiny and I must beg their indulgence for the one-sided questioning of their original design intentions.

Time has a great influence in determining the success of any project. It is now twenty-two years since the completion of the Buruburu project, its present state could be due to

factors the designers, and planners would not have envisioned. This study intends to illuminate the need for designers, developers, planners, government housing officials and policy makers to be connected with the feelings, needs, wishes and priorities of the users. The expressions of these requirements are well evidenced by the bold attempts seen in the changes done by owners and users of these buildings despite strict regulations and byelaw requirements by the local authorities.

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# CHAPTER ONE: INTRODUCTION

## 1.0 Background information

Buruburu estate in Nairobi is one of the largest middle income housing schemes in Kenya covering approximately 4,000<sup>?</sup> hectares. It is situated on the eastern part of Nairobi about 8 km from the city center. This area of Nairobi is historically associated with low-income groups. The black cotton nature of the soil and consequently poor drainage offered no attraction to the early colonial white settlers. The estate is surrounded with lower income neighborhoods with Uhuru and Jericho estates to the west and Umoja estate to the east. Nairobi's industrial area is just right opposite across the Jogoo road. Jomo Kenyatta international airport is some 15 km away.

The project was organized by the Nairobi City council (NCC), National Housing Corporation (NHC), and the Commonwealth Development Corporation (CDC) and Housing Finance Corporation of Kenya (HFCK). It was originally designed to enable middle-income population of the city a chance to own homes. The government envisioned long term solution to the problem of housing by encouraging mortgage schemes. The development involved the construction of 4710<sup>1</sup> units; it was carried out through five phases between 1973 and 1984. The

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<sup>1</sup> Common Wealth Development Corporation Offices, Buruburu estate



successive phases improved on the previous schemes. All dwelling units have a lounge, kitchen, 2-3 bedrooms, shower and toilet. All the original houses are semi-detached with concrete walls, reinforced concrete roofs covered with Mangalore tiles.

PHASE	Year of Start	Year of Completion	No. of dwelling units	Price range -000		
				2 Bedroomed	3 Bedroomed	4 Bedroomed
I	1973	1974	920	36-39	44-59	55-64
	1977	1978	21	-	87.5	-
II	1974	1976	977	65-70	78-98	95-108
III	1977	1978	882	70-77.5	83-99.3	-
IV	1979	1981	857	-	157-192	215
V	1981	1982	781	-	230-255	275-280
Infill V	1983	1984	272	-	280-300	320

**Figure 1.1**

**The number of dwelling units and selling prices of Buruburu Houses**

**Source: Common Wealth Development Corporation Offices, Buruburu estate**

Mains water and electricity is connected to all dwelling units. The storm water drain and the main sewer line are connected to

the city council. Tarmac roads and drives were provided to all the units. Street lighting and shopping facilities were also integrated in the design with corner shops within the phases. To enhance security, a police post was built. Community facilities were also provided, schools, churches and commercial centres.

A brief over view of the housing situation in Kenya since independence is replete with intransigent approaches employed by the government to solve the housing situation.

Buruburu estate was one of the initial mortgage schemes initiated by the government for the middle-income families. It promised a better step towards solving the housing problem by emphasizing house ownership to those who otherwise would not afford to build their own houses. It was like crossing the river Jordan from the desert of inadequate housing. The Promised Land was on sight and Kenyans were getting an opportunity to own houses.

The government seems to have concentrated all efforts on housing provision to the low income group and abandoned the middle income group to the forces of demand and supply in the private sector. This came in the form of self-help debate in the late 1980s. Site and service programmes were not solving the housing dilemma. The middle-income earners were buying out

the poor from their improved houses, who were very eager to make some income from their investment. Nyayo high-rise flats is a typical example, no low-income earners can afford to stay there any more.

Today we have the enabling environment debate. Agenda 21 recommends a multi-sectoral approach to solving the problem of housing. The government, they say, is there to provide governance, an enabling environment and not the services. In 1990s, the process towards housing policy review was initiated based on the enabling approach. This was necessitated by the need to have a critical look into strategies that will guide the preparation and implementation of future housing programmes. The review of the Housing Policy was intended to guide Kenya, along with other members of the international community, to implement the Habitat Agenda and the National Plan of Action on Shelter and Human Settlements. The revised draft Housing Policy was approved by Cabinet in October 2003 and presented to Parliament in November 2003 for debate and adoption.

To come to power, the ruling coalition party promised Kenyans they would meet the estimated annual deficit of 150,000 units in urban areas and of 300,000 housing units in rural areas as spelt out in the National Housing Policy. This would improve

capital accumulation and result in better shelter and housing for the poor. The government sought to initiate the following:

- Slum up-grading programme
- Completion of stalled housing projects
- Adoption of innovative cost effective building materials and technologies
- Provision of new tenant purchase housing scheme, and
- Promotion of full-scale development of secondary mortgage market.

The implementation of the above goals however is still in the in the making.

<b>Region</b>	<b>Floor area per person (M2)</b>	<b>Permanent dwellings (%)</b>	<b>In compliance with regulations (%)</b>
Sub-Saharan Africa	8.0	61.4	48.6
North Africa and Middle east	12.6	84.1	74.1
Asia	9.5	72.9	58.8
Latin America and the Caribbean	14.7	80.0	73.6

**Figure 1.2**

**Table on housing adequacy, by region and development level, 1993**

**Source: UN-HABITAT: Global Indicators Database**

The table above shows clearly the crisis in provision of housing in the third world countries.



## 1.1 Problem statement

The general pattern of the development of slums is usually the same. They begin with the overcrowding of existing buildings and the addition of tenants built by conscienceless speculators to a considerable height on little land, without reference to light, air, sanitation and other standards of decent living and safety. The place of a single family in a reasonably comfortable house is taken by a number of families and in the tenements; people are packed in like chickens in a coop. Wave after wave of newcomers inhabits these rookies. As soon as one generation achieves enough prosperity to get out, it moves on and another with lower standards and income takes its place.<sup>2</sup>

The present look of Buruburu estate today is widely divergent from the intentions of its original designers, planners and developers. Implausible extensions, new buildings and various forms of renovations now present a different statement by the users against the original objectives of the design team. The look of the estate has completely transformed and its state is quickly degenerating into a shanty.

Small-scale business activities have taken over prime locations along the spine road, Mumias-south. Tenants have done a number of residential extensions of all sorts, forms and varieties to cater for Nairobi's growing inadequate housing situation, as

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<sup>2</sup> Moses, R. 1945, *The Atlantic Online*, New York

provision of housing through extensions has now become a very lucrative business.

In the scheme design, the architects proposed a density of about 125-250 persons per acre. This has now been exceeded as the family population continues to grow due to the numerous extensions built. There has been a strain on the services provided.

The sewer system is overloaded which often results in blockages and overflows.

The capacity and size of the water pipes used initially cannot cope with the present demand: more households have to go without water. Electricity supply is strained. Transport provision with more people and vehicles results in traffic jams within the estate, increasing pollution and time wasting

The deplorable state of the estate is also due to lack of basic maintenance by the owners of the buildings.

Some buildings have not been painted over a long period and unreplaced broken roofing tiles have resulted in fungal growth in some houses as the water seeps through the roofing slab. Littering and inadequate garbage disposal all contributes to the appalling state of the estate.

The original owners of Buruburu estate are no longer staying in the estate. HFCK (Housing Finance corporation of Kenya) was involved in the mortgage financing of the estate and as per their

records, the repayment was fully done by the initial beneficiaries. According to Margaret the current mortgage officer of HFCK, "Most of the first owners have moved out of the estate to more up market neighbourhoods. If there are any staying, then their financial state has not improved over time. The majority are the third or fourth owners." The estate is seen by the owners as an investment to generate income, not a home. This attitude contributes to the neglect and the crowding and congestion now evident. The high mortgages or loans to pay the houses further exacerbate the situation.

The blame has all too often been loaded on the corrupt government officials and the inefficient byelaws of the local authorities. They are not strict enough and give in to corrupt practices. A closer examination of the situation however reveals much more. Insensitive provision of users' basic needs has also probably contributed to the deplorable state of affairs. Economic and social changes over time tend to completely modify the uses and needs designers provide. The changes in family sizes, economic abilities, tastes and fashion, political climate and cultural influences would affect the success of any housing scheme the size of Buruburu. How far can planning and design accommodate all these crucial factors to ensure a successful housing estate? How successful is Buruburu estate?



What ways and methods can be used to understand the accomplishments and failures of this large housing scheme?

## **1.2 Aims and Objectives**

Objectives for this project report are:

- Present a historical treatise of Buruburu estate to understand the major spatial changes that has taken place since its inception in 1973 to present day
- To decipher, from the designed and built environment designer intentions vis a vis those of the user.
- To show the efficacy of POE with a view to formulating guidelines for the planning and designing of middle-income housing.
- The design shortcomings that has contributed to the general degradation of the estate by analyzing the present conditions on site

### 1.3 Scope and limitations

- The author has exclusively focused on the design and planning aspects of human settlement. Successful housing provision in Buruburu would however involve other socio-economic influences that are beyond the scope of this paper. This means those facilities and not the forces that shape them (political, economic, social, etc.), have been taken into account.
- Many actors participate in the use of houses, including investors, owners, operators, maintenance staff, and perhaps most important of all, the end users (i.e., actual persons occupying the house). The focus of this report has been limited to occupants and their needs as they are affected by building performance.
- Some crucial maps, drawings, data and reports of the project could not be found as the scheme was completed some 20 years ago.
- Certain qualitative aspects of the scheme such as aesthetic beauty, or ambiance of a space could not be appropriately evaluated, as there is no appropriate standard format of measuring them.

- Data collection was also limited by availability of time and finances so that what is presented is the best of what could be achieved.

## 1.4 Significance of study

- Housing is a basic right of every human being. In the third world countries, as much as 50% of household incomes are spent on provision of shelter. POE can help improve the delivery of these services and justify actions and expenditures. Large projects have greater demands for accountability, and POE helps generate the information to accomplish this objective.
- Very few POE studies have been done in Kenya. Architects, designers, environment-behavior researchers, and facility managers can benefit from a better understanding of building-occupant interactions. This requires more rigorous scientific methods than design practitioners are normally able to use. POE research in this case involves thorough and precise measures and more sophisticated levels of data analysis, including factor analysis and cross-sectional studies for greater generalizability of findings.

- POE enables developers' assess their experience of managing property to find out whether they have received value for their money through measuring the functionality and appropriateness of design and to establishing conformance with performance requirements as stated in the functional program. Housing programmes have policies, actions, and expenditures that call for evaluation. When POE is used to evaluate design, the evaluation must be based on explicit and comprehensive performance requirements contained in the functional program statement
- Users can measure their satisfaction with the completed project in terms of its functionality of purpose, comfort and standard of accommodation.
- New ideas are risky and yet necessary to make advances. POE can help determine how well a new concept works once applied.
- Public Housing programmes are by nature repetitive. Through POE evolutionary improvements in programming and design criteria are identified, and the

validity of underlying premises that justify a repetitive design solution tested.

## **1.4 Methodology**

The bulk of this study will be based on a review of the published/unpublished print and Internet-based literature, and a case study of Buruburu estate. Certainly many factors have contributed to the deplorable state of the development. Isolating planning and design decisions allow for a clearer view of the issues involved. The study has involved the wider settlement level of the context, neighbourhood and history of the estate to the cluster level of the group of units making a court the individual unit being analyzed by element.

### **1.5.1 Choice of study area**

Buruburu estate has been chosen for this study because of its large size. The development period of the entire estate spans some eleven years. The typical unit designs are homogeneous with similar courtyard design, construction materials, a single developer and a common source of mortgage finance. This allows for an easier comparative study across the board.

The mixture of tenure with both owner-occupiers and rental tenants provides a rich base for study. The conflict of interest with some owners keen on creating a home while others focusing on making as much profit from their investments as is possible brings out some of the salient factors more clearly.

Several changes have taken place in the project since its inception. Population growth, change in family structures, surrounding neighbourhoods estates and development of infrastructure. The level of insecurity and crime also continue to influence the original design decisions.

## **1.5.2 Data collection**

The data-gathering methods included interviews with the tenants, owners, users, workers, developers, designers and the financiers. All the different categories viewed the success or failure of the project very distinctively. Surveys, direct observation and photography was used to capture the ongoing changes and alterations for better or worse in the general out look of the development. Photographs have been extensively used to capture the spatial changes made by the present tenants, use of various types of materials and colour. Activities carried out by the users in various forms i.e. children playing or business activities taking place.



Discussion sessions with the architects and planners and the client to provide first hand information on the overall design intentions, goals and objectives, challenges and problems experienced during and after the project development and lessons learnt.

## CHAPTER TWO: LITERATURE REVIEW

### 2.0 Definition of POE

Post-occupancy evaluation (POE) is generally defined as the process of systematically evaluating the degree to which occupied buildings meet user needs and organizational goals. The POE provides "an appraisal of the degree to which a designed setting satisfies and supports explicit and implicit human needs and values of those for whom a building is designed" (Friedmann et al, 1978; 20).

The goal of any design development is to meet various needs by the clients. How well these needs are met is often assumed and that is the reason POE is gaining acceptance.

Another definition of post-occupancy evaluation offered by Preiser et al. (1988): post-occupancy evaluation (POE) is the process of evaluating buildings in a systematic and rigorous manner after they have been built and occupied for some time. The history of POE was also described in that publication and was summarized by Preiser (1999), starting with one-off case study evaluations in the late 1960s and progressing to system wide and cross-sectional evaluation efforts in the 1970s and 1980s.<sup>1</sup>

In creating a development, planning is required and resources are used extensively but the test of success of a project development

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<sup>1</sup> *Wolfgang F.E. Preiser Learning from Our Buildings: A State-of-the-Practice Summary of Post-Occupancy Evaluation* (2002) Nat' Academies Press



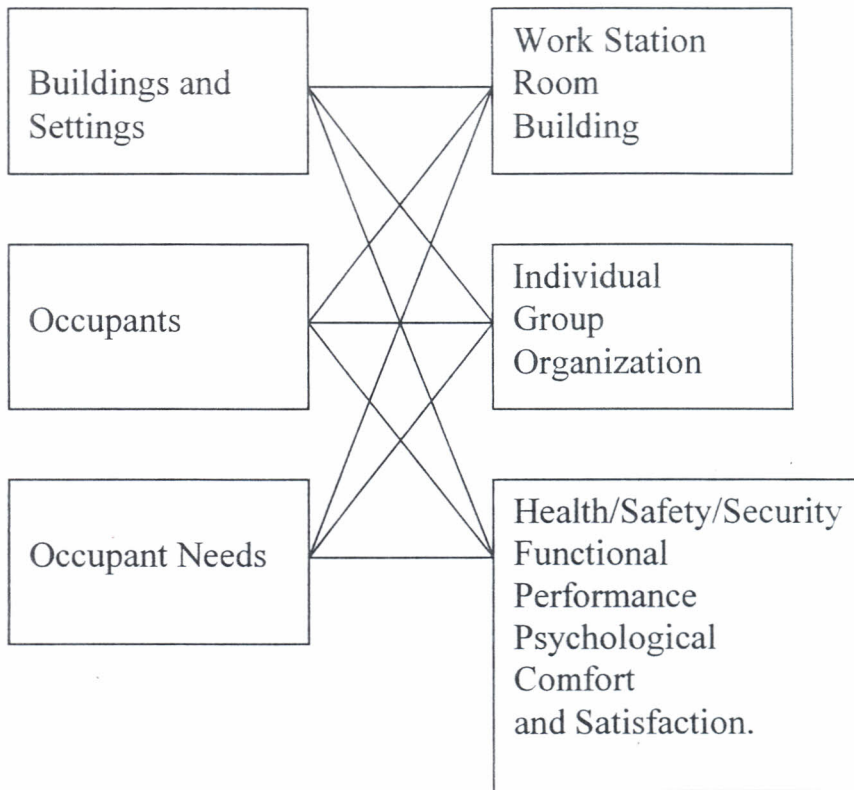
comes after usage. Translating great ideas to tangible and concrete functional design is exigent and measuring the degree of accomplishment is even more. Instruments can aid in computing variations say in temperatures, or light. However, the users comfort counts in the end. One needs not be a great cook to appreciate the food. Users often do not have to understand all the complex design issues that generate a successful scheme but they know and feel when the project is functional or disastrous.

## **2.1 The Evolution of POE**

POE should be differentiated from Technical evaluations. The latter involves structural tests, reviews of load-bearing elements, soil testing, and mechanical systems performance checks. Although technical tests indirectly address such criteria by providing a better and safer building, they do not evaluate it from the point of view of occupant needs and goals or performance and functionality as they relate to occupancy.

POE addresses questions related to the needs, activities, and goals of the people and organization using a facility, including maintenance, building operations, and design-related questions. Other tests assess the building and its operation, regardless of its occupants F.E. Preiser (2002).

POEs measure both successes and failures inherent in building performance.



**Figure 2.1**

**Elements of building performance**

Preiser, 1989, *Building Evaluation*, pg2

## 2.2 Benefits of POE

Aids communications among stakeholders such as designers, clients, end-users and others by creating mechanisms for quality monitoring, where decision-makers are notified when a building does not reach a given standard;

POE supports fine-tuning, settling-in and renovation of existing settings by providing data that informs specific future decisions. It also supports the improvement of building delivery and facilitates management processes.

POE also sustains development of policy as reflected in design and planning guides through accelerating organizational learning by allowing decision-makers to build on successes and not repeat failures.

It aids in cursory facility assessments to determine facility needs for new construction or renovation projects.

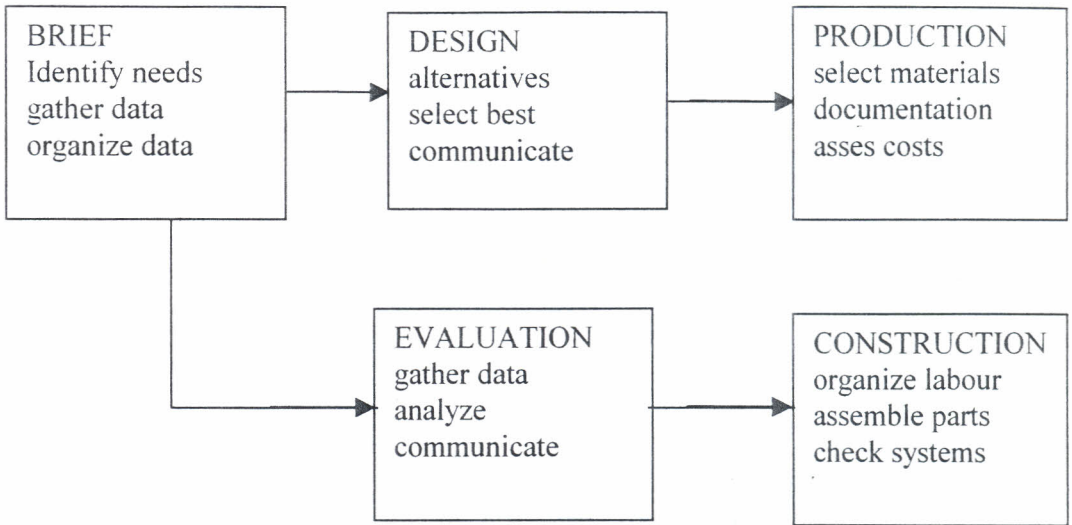
Other benefits (Preiser et al (1997) categorized into short (immediate), medium (3-5 years) and long-term (10-25years) are:

Short-term benefits which involves the identification of and solutions to problems in facilities, proactive facility management responsive to building user values, improved space utilization and feedback on building performance, improved attitude of building occupants through active involvement in the evaluation process, understanding of the performance implications of changes dictated by budget cuts, and better-informed design decision-making and understanding of the consequences of design.

Medium-term benefits where built-in capacity for facility adaptation to organizational change and growth over time, including recycling of facilities into new uses, significant cost savings in the building process and throughout the life cycle of a building, and accountability for building performance by design professionals and owners.

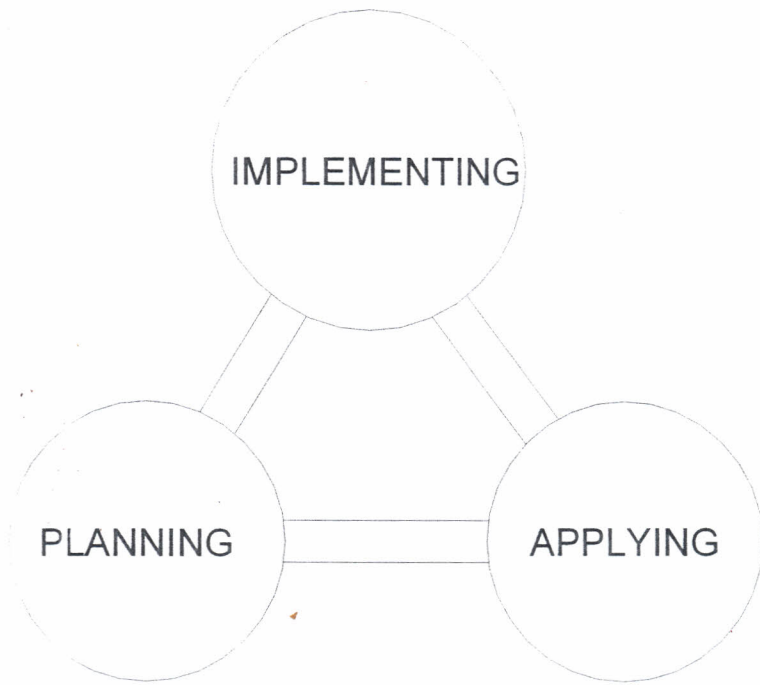
Long-term improvements in building performance, improvement of design databases, standards, criteria, and guidance literature, and improved measurement of building performance through quantification. The most important benefit of a POE is its positive influence upon the delivery of humane and appropriate environments for people through improvements in the programming and planning of buildings. POE is a form of product research that helps designers develop a better design in order to support changing requirements of individuals and organizations alike. POE provides the means to monitor and maintain a good fit between facilities and organizations, and the people and activities that they support. POE can also be used as an integral part of a proactive facilities management program.

Building condition assessments are expert-driven processes that look primarily at observable conditions of the physical structure and building systems. It helps create a political rationale and technical physical improvements schedule for spending capital improvement funds to reverse the deteriorating effects of deferred maintenance.



**Figure 2.2**  
**Building Process Flow diagram**  
**Adapted from Law, 1981, Evaluation of the Post Occupancy**  
**Performance of Buildings, pg 8**





**Figure 2.3**

**Post-occupancy evaluation process model**

**Adapted from Wolfgang, F.E. Learning from Our Buildings: A State-of-the-Practice Summary of Post-Occupancy Evaluation (2002) Nat' Academies Press**

**Planning:** Intended to prepare the POE project through reconnaissance and feasibility, resource planning, and research planning. In this phase, the parameters for the POE project are established; the schedule, costs, and manpower needs are determined; and plans for data collection procedures, times, and amounts are laid out.

**Conducting:** consists of initiating the on-site data collection process, monitoring and managing data collection procedures, analyzing data. This phase deals with field data collection and methods of ensuring that reestablished sampling procedures and data are actually collected in a manner that is commensurate for the final phase.

**Applying:** contains, reporting findings, recommending actions, and reviewing outcomes. Obviously, this is the most critical phase from a client perspective, because solutions to identified problems are outlined and recommendations are made for actions to be taken. Furthermore, monitoring the outcome of recommended actions is a significant step, since the benefits and value of POEs are established in this final step of the applying phase.

## 2.3 Forms of POE

One of the early forms of POE is the work of Oscar Newman (1972). In his book *Defensible space*<sup>2</sup> he sought to establish any linkages between crime and design. While working on a design improvement programme in New York, he noticed the rampant correlation between crime and the nature of space in which the crime took place. The book he wrote brings out very clearly that householders can create a system of defensible space if the design allows them to supervise and take responsibility for the spaces in which they live. He realized that territoriality can be achieved through zoning of spaces and allocating them to specific individuals. This will help define a place by giving it a sense of character so that outsiders or strangers will be psychologically discouraged from carelessly entering the space while encouraging residents to defend their areas, since they now can be clearly said to belong to them. Once residents reestablish control of their environment, "*the criminal is isolated because his turf is removed.*" The design of entry and exit areas should allow easy observation. Any form of obstacles such as walls, overhead covers, roofs, or plants should be done very carefully to allow eyes on the space. The more people can see from a distance what is to take place, the less likely someone will commit a crime. The opposite is also true, if one is hidden, the temptation to indulge in unwanted behavior is more likely. *Oh conspiracy, shamest thou to*

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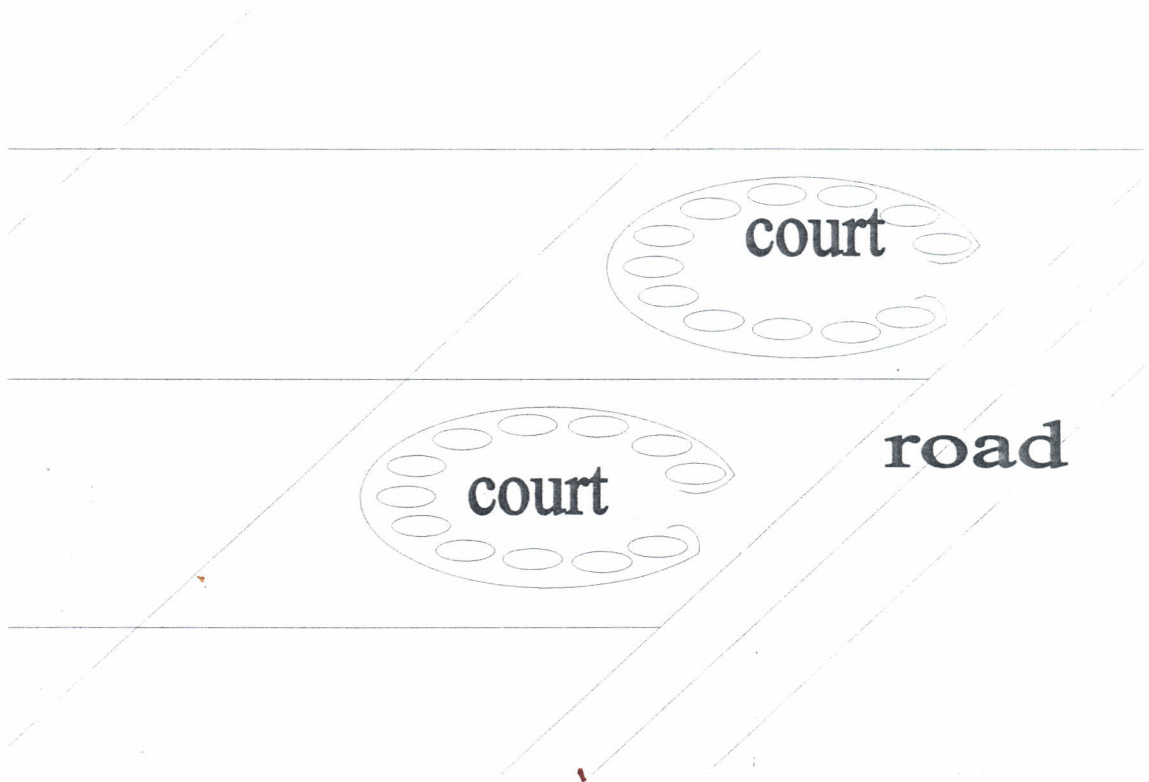
<sup>2</sup>Newman, O. *Defensible space; crime prevention through urban design*. New York: Macmillan, 1972



*hide thy dangerous visage by night when evils are most free!* Brutus could not be more right. Parents will provide more effective care and protection, if they can see where and with whom their children are playing .

Public housing can come to be associated with certain social malaise. This can easily influence the residents and encourage stigmatisation. Design can help create an environment which has a human scale and that avoids disgraceful associations. Brutal architecture may provoke brutal behaviour.

Bad <sup>of</sup> ~~com~~pany corrupts good character. Design can influence the environment and vice versa. By juxtaposing notorious public houses with safe zones in adjacent areas, good environments will have a positive influence on the public houses.



**Figure 2.4**

**Defensible space. Schematic sketch illustrating territorial definition reinforced with surveillance opportunities.**

**Newman, O. (1972) *Defensible space; crime prevention through urban design*. New York: Macmillan,**

Alice Coleman <sup>3</sup>(1985) presented the concept of POE as an analogy with a trial. The Utopian ideal environment, which is often the dream of architects and planners, is put on trial. It is accused, then she provides the evidence to prove her case, the suspects are then lined up for identification after which the trial begins and the case for prosecution advanced. Possible objections are handled under cross-examination before she discusses some preventive and rehabilitative measures to put right past mistakes and avoid them in future. Her study of houses and blocks covered over 100,000 dwellings. Coleman explained how so much public and private money can be wasted in housing improvement schemes and that government housing policies can be wrong and irrelevant. Her work demonstrates clearly that design can be a powerful influence for bad or good housing environment. The accusation of utopian ideals begins with the example of Oak and Eldon gardens block of flats that was condemned to death even before it had been fully paid for. The most popular design movements the Garden City by Ebenezer Howard and the Radiant City by Le Corbusier are accused of having no scientific basis.

Coleman establishes evidence linking social malaises and the design and layout of modern estates. This could be in the form of verbal

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<sup>3</sup>Coleman ,A (1985). *Utopia on trial: Vision and reality in planned housing*. London: Hilary Shipman,

testimony, official statistics or material clues that could be objectively observed in each block of flats. The main observable traces she chose to explore were litter, graffiti, vandal damage, and excrement.

The various types of design are identified as the suspects mainly the various sizes of blocks, or <sup>number</sup> (no.) of dwellings per block, circulation types, entrance characteristics, and features of the ground.

By using graphs, Coleman shows how trends can be plotted against the design variables. For example, as the number of dwellings per unit increases, each kind of social malaise tends also to vary. Each design variable is marked against the observable traces of social malaise. It comes out clearly that the five most powerful design variables are dwelling per entrance, dwellings per block, number of stories per block, overhead walkways and spatial organization.

The strength of Coleman's arguments is to be found in cross-examination. Common design assumptions are systematically questioned under the scrutiny of scientific findings. Size per se does not automatically result in increased social malaise. Explanations based on age of the building, poverty, unemployment, family structure, maintenance staff, and recreation facilities.

Housing is a very emotive issue with politicians Gilbert A & Josef G ,(1981)<sup>4</sup> because it expresses the poverty of the people in a very graphic manner.” It is a highly visible dimension of poverty.” Gilbert and Josef poses several questions and the two relevant ones discussed here are whether the people are capable of building their own homes and how successful can they be. The mismatch between designer and user would be eliminated.

Three assumptions concerning third world housing are discredited. Sweeping global statistics should be evaluated carefully as they do not reflect the various priorities and culture of people .The criteria of judging housing conditions are quite subjective and ethnocentric.” To a hungry family, food is of far greater importance than shelter, especially where the climate is dry and warm.” People have differing priorities. One man’s meat is sometimes another man’s poison. Rural life of developing countries has been romanticized and the rapid urbanization bedeviled in many writings. The truth however shows that most of the urban areas enjoy more services and amenities than their rural counterparts do. Cultural, environmental and social conditions should be taken into account when judging housing conditions in third world countries. Local factors should be taken into account when making comparisons between different countries.

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<sup>4</sup> Gilbert A & Josef (1981) “ *Cities Poverty and Development* “, Oxford University Press



The rationality of the poor has often been questioned by the professionals yet many studies today show that they are capable of improving their houses over time despite the challenges confronting them. The oppressive ideas of Oscar Lewis, who argued that, the poor are poor because they are poor does not hold. This culture of poverty is what led to the idea that only governments are capable of building satisfactory houses for the poor.

Turner and Margin however showed that the governments are best advised to help people help themselves. Architects and other professionals have often had the erroneous view that good housing is an end in itself. The example Turner gives of a family living in an architecturally superior house but who can hardly cope to pay for the services provided does not make them better off in comparison to another family, staying in a less architecturally appealing house but are able to maintain the few services they are given. Therefore, a poor family living in a shelter of higher architectural standards that does not match their needs and income are less happy. The most important aspect of housing is not what it is but what it does for the people.

John Turner's <sup>5</sup>advice to government agencies and architects to provide and service land and to leave the actual building to the

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<sup>5</sup> Turner J.C (1976). *Housing by People*, Marion Boyars, London



people themselves has been taken up very vigorously by many governments and building agencies.

Over time, the major failures resulting from some of the self-help programmers can be attributed to poor administration by many third world governments. The strictness over excessively high standards demanded of site owners by most government authorities have continued to frustrate on-going public housing projects as the building and land costs continue to escalate. Most poor people will not wish to be burdened by debt repayments in order to meet the expected high standards. They would more likely settle for no services.

It has been thought that things work better by themselves if there is no interference, this can falsely encourage governments to do nothing instead of aggressively carrying out reforms in legislation, policy formation, taxation and land speculation controls. There are instances where the politicians to woe voters have manipulated building programmes.

The other criticism leveled against public housing projects given by Josef and Gilbert<sup>6</sup> is the inevitable shift of people that occurs. It involves movement of the inner city slum dwellers resulting in economic, social and personal dislocations. In most cases, the schemes can only be started in the urban peripheries where land is cheaper. This translates to higher transport costs. If the government

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<sup>6</sup> Gilbert A & Josef (1981) "Cities Poverty and Development" Oxford University Press

does not intervene, land prices will also rise given the pressure by the higher population.

Finally, the idea that housing programmes create jobs for the people is very questionable. Where large-scale schemes are involved, it is usually the big companies that are able to build at competitive rate there by under-cutting the small-scale manufacturers.

John Habraken fully summarizes Hamdi's<sup>7</sup> thesis when he says that "It is enough to decide that architecture should leave housing alone, as it generally has done in the past.(John Habraken- " Notes on a traveler")

Nabeel Hamdi presents us with an ever-darkening future of the world-housing situation. He affirms that despite all the innovations, investments, information and data, political goodwill, good intentions and all the bright ideas, the shelter issue is worsening. He sees no answers, all attempts being made are hopelessly inadequate, and the excuses are as confusing as they are numerous. Different standards, varying degrees of needs, cultural beliefs and norms make it impossible to determine or know the extent of the problem.

The statistics he provides are very sobering.

- 100 million people are homeless worldwide.

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<sup>7</sup> Hamdi, N (1991). *Housing without houses*. Van Nostrand Reinhold.

- 53,000 new houses are required daily to meet the housing demand.
- Most countries spend a mere 3-6 % on housing.

Meanwhile debates on housing are still raging. What standards are to be used, should they be lowered, increased or abandoned? Who decides what for whom? How far can the community participate in decision making?

Which direction should be taken for effective housing deliveries, cooperatives, demolitions, sites and services, integrated upgrading projects, rent control, subsidies, or zoning? 1987 was branded the year of shelter and saw numerous papers and presentations, conferences and demonstrations all aimed at developing new ideas and awareness yet the homelessness situation is worsening as the populations in most developing countries continue to sore at a rate of 2-3.5 % each year.

The prized aid to the developing countries are so tied that they help to serve the donors political and commercial interests and not the needy countries. The situation in the developed countries is no better, the U. S. A has a staggering 10 million homeless people (Jonathan Kozol 1988) Hamdi also points clearly that architects need to understand and take interest in the forces that influence housing.

The bilateral and multi-lateral agencies and the governments should be understood within the contexts under which they operate. He admits that this knowledge will offer an enabling environment for

discussion and practical response as to why seemingly good ideas, theories and award winning designs regularly fail. While it is true that the present housing conditions are deplorable globally, it would have been worse if no remedies were put in place.

The proverbial boy who made a difference in the life of one star fish reminds us that some good can be done however insignificant. Government policies are getting closer to peoples needs. We will not attain the goal of providing adequate shelter in a sudden flight, but progressively.

From the foregoing arguments, it is clear that evaluating the success of any housing scheme will depend on many parameters. POE is still at its infancy and has only 40 years of application. More methods apposite for evaluation are needed and with the ever-changing conditions the methods, systems and techniques should be adaptive enough to remain relevant.



## **CHAPTER THREE: CASE STUDY OF BURUBURU**

The Buruburu housing scheme as stated earlier was a government initiative to try to enable middle-income households an opportunity to own homes. It was done in collaboration with the Nairobi City council (NCC), National Housing Corporation (NHC), and the Commonwealth development Corporation (CDC). The scheme was done in six major phases between 1973 and 1984.

The author intends to carry out the case study in an urban context. This will be done at different scale levels mainly:

- Estate /settlement level.
- Cluster/Neighbourhood
- Unit/dwelling

The data collection in this area was severely limited as most records of the original plans and design schemes have been lost.

The data collection has been based mainly on:

- Interviews carried out with the Architects of the project, Mutiso Mennezes. The financiers of the

project Housing Finance of Kenya(HFCK), the coordinators of the project National Housing Corporation(NHC) and Nairobi city council.

- Observations by the author through a period of ten years. The Author actually resided in one of the houses in phase four of Buruburu. This enabled constant observation on the attitudes and response of the users over a good period.
- Photography was used to capture the state of physical changes noticed over time. Mainly the renovations and additions and the deterioration and lack of maintenance of the actually building elements.
- Sketches

It is to be noted that the process of POE differs from technical evaluations as it addresses questions related to the needs, activities, and goals of the people and organization using a facility, including maintenance, building operations, and design-related questions and not just the building structure Preiser, W.F.E. (1991).



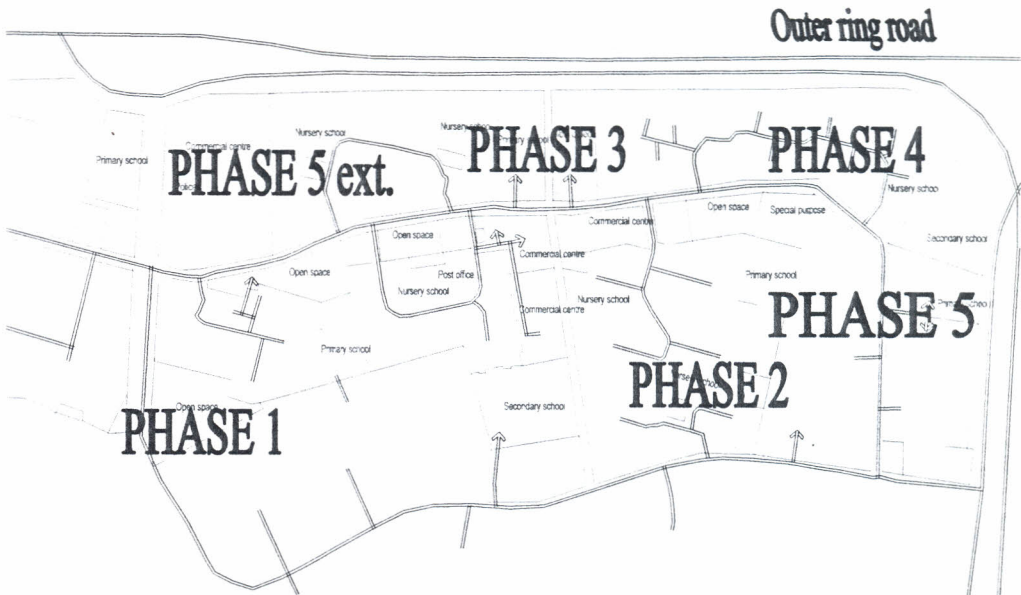


**Figure 3.0**

**Location of Nairobi, Kenya**

**The area of study is in Nairobi on the eastern part.**

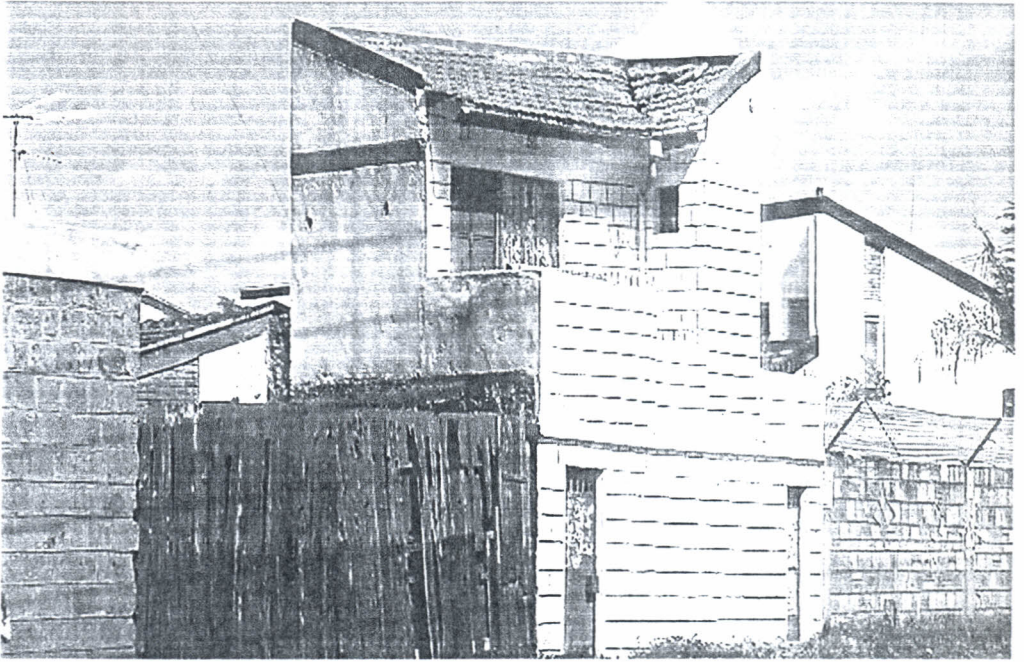
**Source: Author**



**Figure 3.1**

**A map of Buruburu estate showing the five phases, commercial centres , nursery, primary and secondary schools, police stations and church facilities along the main spine road Mumias-south.**

**Source: author**



**Figure 3.2**  
**The changing face of Buruburu IV.**  
**Source: Author**

Note the variety of perimeter walling; one in timber off-cuts, another in natural stone, still another painted in white and still another topped with corrugated iron sheets.

The single storey room extension in foreground has a different character from the original houses in shape, roof, size and scale.

### **3.0 Settlement Analysis**

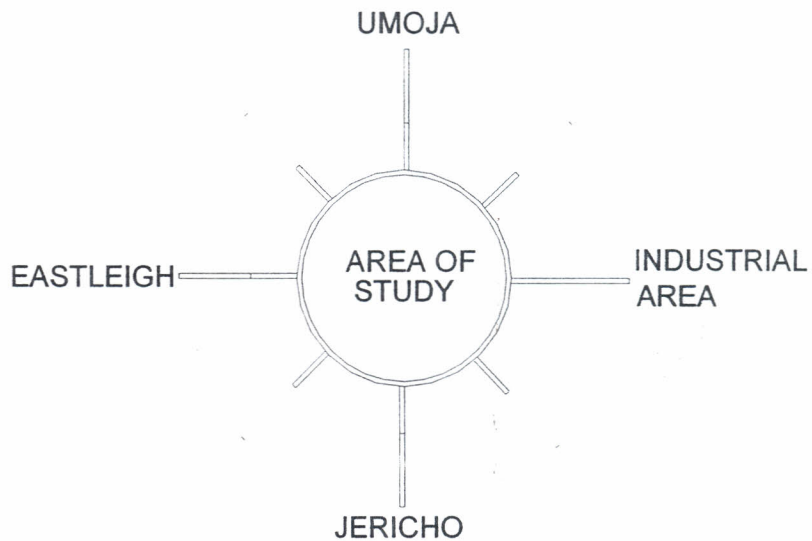
The housing scheme is located in Nairobi as shown in Figure 3.0 on page 39 and Figure 3.2 on page 40.

Figure 3.2 shows the site in relation to the other neighbourhoods. Mumias-south road is the main circulation spine connecting all the five phases of the estate. It is quite useful in easing traffic load during peak hours on Jogoo road. The estate is very close to the CBD and well serviced with a good network of road system. Outer-ring road is on the eastern side while the main Jogoo road is towards the south. The scheme is fully serviced with roads, electricity, water and sewerage provisions.

The scheme accommodated quite substantial space for social, religious and commercial activities. Several nursery, primary and secondary schools are provided within the development. See figure 1.2

The population density in the area is average though for the surrounding estates it is much higher. The land values are normal as it is located in the eastern side of the city more commonly associated with low-income groups. The entire project has a typical cluster typology, which is done repeatedly.

Commercial activities within the area are booming and have resulted in the mushrooming of illegal building extensions and alterations. This is quickly changing the face of the estate as in figure 3.1.



**Figure 3.3**

**A schematic representation of the neighbouring estates and zones to the area of study.**

**Source :Author**

Umoja estate was developed after Buruburu and it targeted a lower income group in comparison to Buruburu. The effect



of this on Buruburu is very apparent in the type of design and extensions now being tolerated in Buruburu.

Industrial area continues to attract large numbers of casual labourers who pass through Buruburu from other low-income estates such as Dandora and Kariobangi. The problem of crime and security has been aggravated by this linkage.

Jericho and Eastleigh are other low-income estates with a history of crime and insecurity. All these factors have influenced the state, value and image of the estate.

### **3.1 Courtyard Analysis**

Cluster housing in its most simple form is housing that is joined together so that individual units share common open spaces, walls floors and ceilings. In Buruburu, all the units share common open spaces, roads, parking and certain facilities such security and small shops.

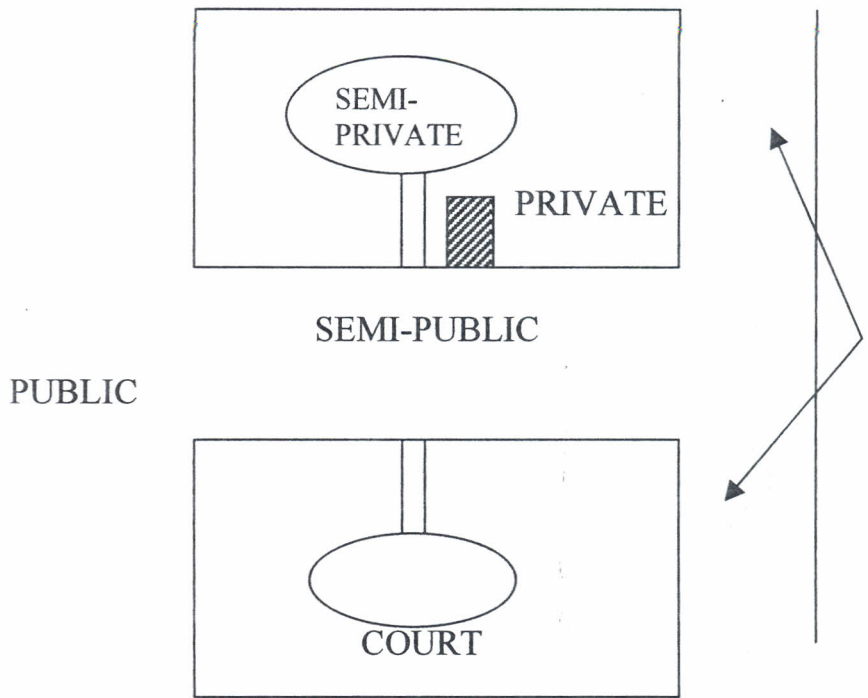
It provides a reasonable compromise over the wastefulness of suburbia housing and the congestion and inhuman conditions of urban housing.

Some of the advantages of clustering are that it has the ability to organize a hierarchy of private, semi-private, and public spaces.

The situation in Buruburu allows for a desirable degree of privacy gradient from the public realm to semi-public space



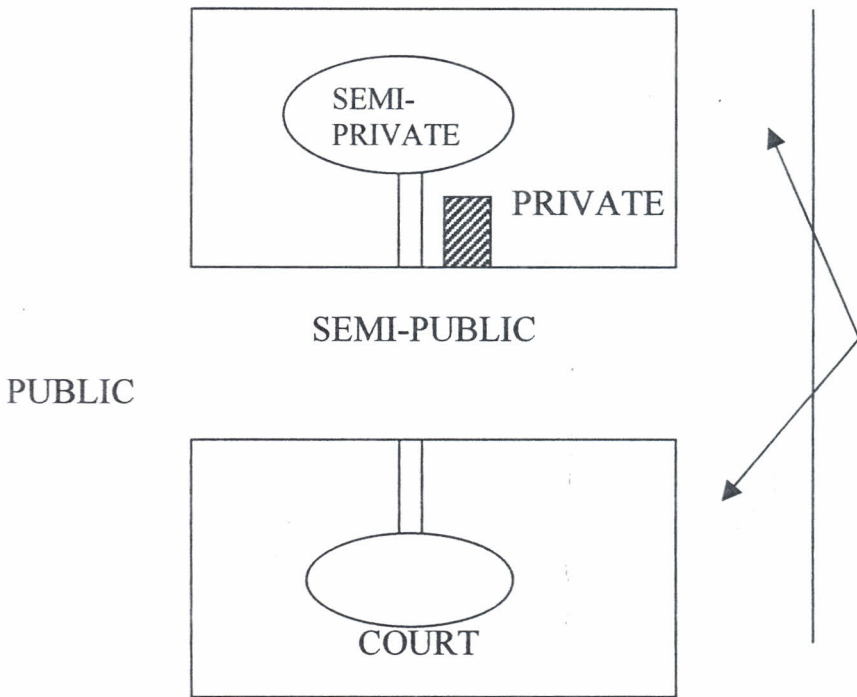
to semi-private space to very private as is illustrated in the diagram below.



**Figure 3.4**  
**Privacy gradient as is found in Buruburu**  
**Source: Author**

The clustering has brought together people of different tribes, ages and professions together unlike in the low-income estates where people from particular ethnic

to semi-private space to very private as is illustrated in the diagram below.



**Figure 3.4**

**Privacy gradient as is found in Buruburu**

**Source: Author**

The clustering has brought together people of different tribes, ages and professions together unlike in the low-income estates where people from particular ethnic

groups tend to be together or in the very high-income neighbourhoods where the tendency is to be isolated.

The sharing of the open spaces at the semi-public and semi-private level allows for this free interaction.

Open spaces allows for social interaction. People are forced to meet and share greetings. Children play together, youths meet and talk and old people visit each other. A degree of maintenance and upkeep of the common areas is needed and this forces people to have to come together and plan. This is particularly necessary for security and safety concerns at the cluster level.

Sharing of facilities make operations like the provision of grocery stores, security and parking viable and affordable. In the original master plan done by the planners, security as an issue was not incorporated in the design. (Arch. Simu of Mutiso Mennezes). The courtyard concept has lent itself very easily to organizing security within the courts by blocking out the passages between buildings and limiting entry to court through just one gate. Additional fences have had to be made for example

Figure 4.0 on page 73.

The heights of buildings in Buruburu have been maintained at just one storey. Even in cases of extensions, the heights have not been compromised.

Phase 5 was the final stage of the project and several design improvements were incorporated. The individual units were much bigger comparatively. The courtyards were much smaller and more functional.



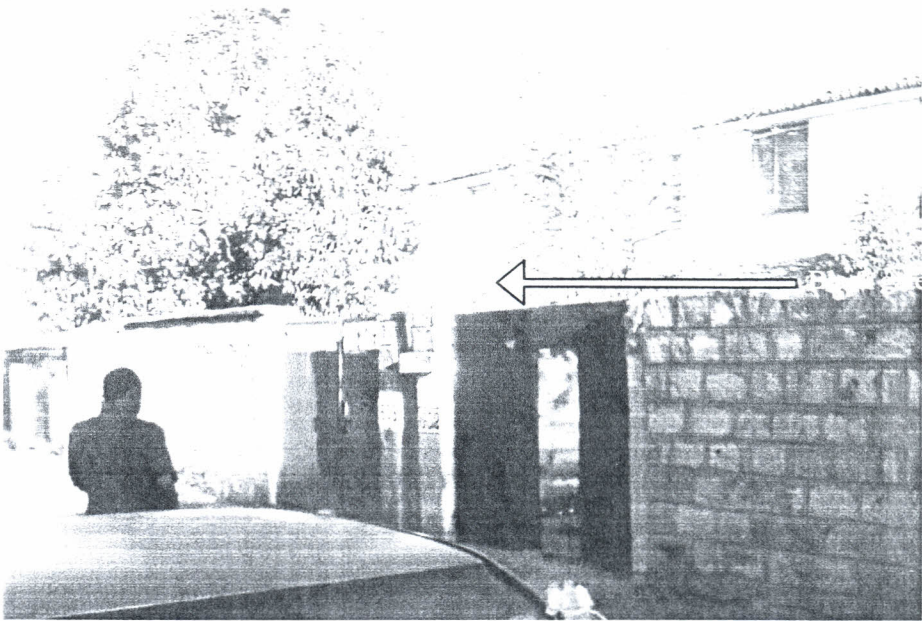
**Figure 3.5**  
**Phase V Extension layout**  
**Source: Author**

## **3.2 Element Analysis**

### **3.2.1 The gate**

The original gates made of timber off cuts have been replaced in most cases by metal burglarproof swing gates.

Some of the gates are completely solid with no visual access to the compound. Others are slightly open and one can see through to the compound. The residents have given some form of identity to their houses by adapting various colours and shapes to their gates. The residents have found some freedom of expression against the facelessness of the estate by painting the gates in different colours. The identity numbers of the houses have been repainted and in certain circumstances erased. The typical gate will have the whole opening large enough to allow a car to enter and a small door within the gate for individuals.



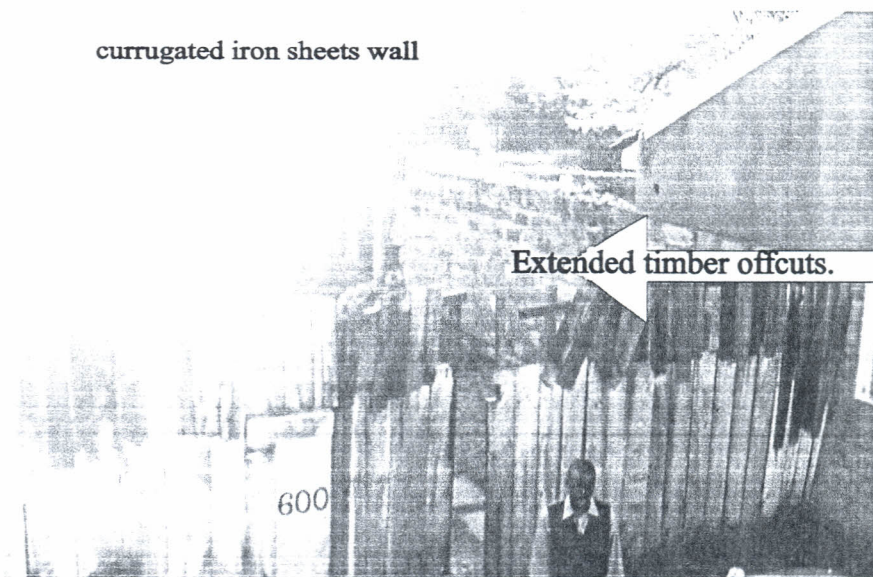
**Figure 3.6**  
**Types of gates**  
**Source: author**

Notice the three gates all in different colours, shapes and sizes, giving the much-needed identity to the individual houses.

### **3.2.2 Compound walls**

Stone masonry walls have now replaced the original timber fences in most cases though there are still instances where the original fences are in place. The walls have also been areas of expression through use of different keys, colour, stones and heights. Some walls are topped with broken glass, barbed wires or metal spikes on top of the usual concrete coping.





**Figure 3.7**  
**Varying compound walls**  
**Source: author**

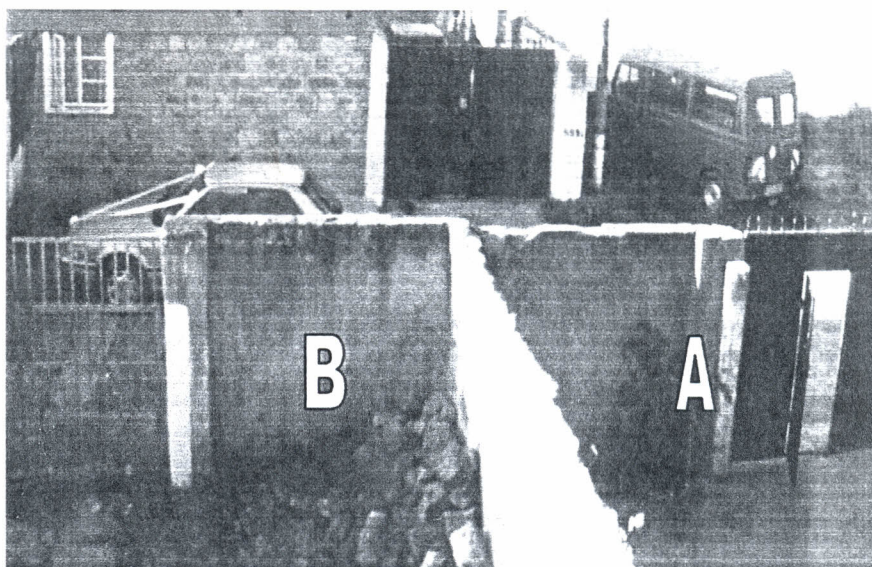
Notice the broken bottle topping on the compound wall in the background. The wall in the far back is done in corrugated iron sheets on timber frames. Given the main road next to the compound it provides a better noise buffer than the original timber off cuts. The residents have tried to respond to privacy needs by extending the original off cut timber walls by more timber pieces. The semi-detached nature of the walls allows mutual benefits by the adjacent owners. There is no need for double walls.

The gates and the walls allow for greater privacy than originally allowed for. The higher level of privacy however increases further chances of insecurity, as neighbors do not

get opportunities to know each other. In case burglars enter the compound; they have more opportunity, time and hideaway provided by the walls. Oscar Newman's eyes on the street surveillance cannot apply.

### **3.2.3 Front Yard**

The front compound is used in most cases for parking where the tenants have a vehicle. There is a concrete structure for waste materials on one corner. The parking bay was originally done in 600mm x 600mm precast concrete slabs, leaving the rest of the ground in natural grass. In most houses, the entire compound has been redone in concrete screed; others are finished in cabro blocks. Tenants particularly interested in the plot have planted gardens with flowers. Others use it as a dumpsite for storing un-used goods.



**Figure 3.8**  
**Types of Front Yards**  
**Source: author**

Compound A in figure 3.6 has the front yard completely redone and finished in cement screed. There is a small plant by the wall.

Compound B has the yard as it was originally done. Only stones dumped on one corner. Two adjacent neighbours have very differing uses and developments to their compounds. In extreme cases the frontage has been completely covered to provide extra room for indoor commercial activities. This may be in form of complete extension of the main house or just a simple shed depending on the nature of activity being provided for.

Others have used the space for keeping poultry, dog kennels or just drying clothes.

The front yard is perhaps the one space that has undergone the greatest transformation from the original design as it is quite flexible and can accommodate a variety of activities from entertaining guests to a garage store.

### **3.2.4 The roof**

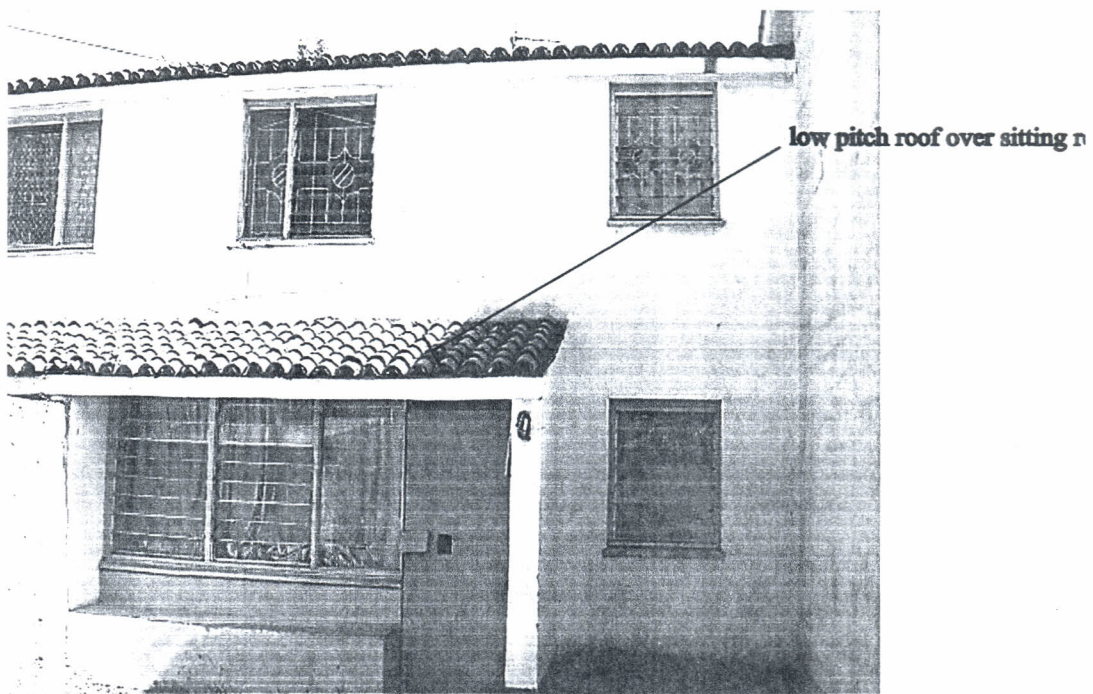
The roofing in phase four of the housing project in Buruburu was entirely done in concrete slab with Mangalore roofing tiles on a pitch of 18 degrees slope. This has always resulted in damp and leakage problems especially under the small roofing over the living room given the slow speed of run off rainwater. The Mangalore tiles are more of aesthetic-boosters and offer very little protection from the vagaries of weather. This is evidenced by the widespread peeling off paint in most of the buildings especially in the sitting room and the ceilings in the upper floors.

The concrete roof provides no ventilation. This has resulted in formation of moulds and mildew on some walls and ceilings becoming a health hazard for some tenants.

The retention heat capacity of concrete is much higher than ordinary roofing tiles. More heat is absorbed and retained



during the day and then transferred at night with the consequence of excessive heat in the upstairs bedrooms.



**Figure 3.9**  
**Roofing style used in Buruburu phase 4**  
**Source: author**

Notice the minimal roof eaves of only 250 mm. On windy rainy days, a lot of rainwater enters the house. There is also very little protection from dust and glare from the direct sunlight and solar heat during the day.

From the picture, one can notice the minimal roof height and ceiling height. All this contributes to a very uncomfortable dwelling in the end notwithstanding the costs savings gained.

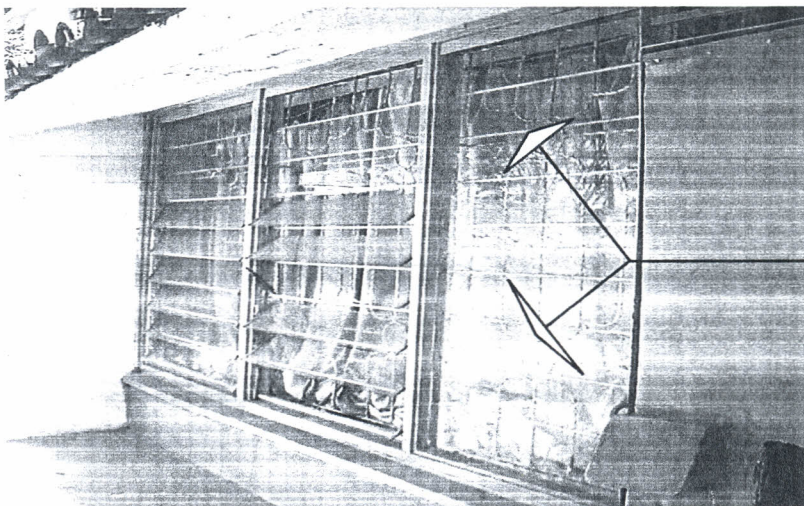


It is not surprising that no extensions done or new buildings constructed have opted to use this kind of roofing tiles or roofing pitch or concrete slab.

### **3.2.5 Windows and Doors**

Timber frame louver windows were used in the original design and tenants have made very little changes.

There has been varying burglar-proofing designs to all windows due to increasing insecurity. The wooden framework of the windows has provided opportunities for colour expression. While most louver glazing is easy to replace, the closing and opening systems are not always efficient. Most residents have had to live with unfitting windows.



**Figure 3.10**  
**Louvered windows**  
**Source: author**

Typical sitting room window. Extends the full width of the room and so is quite generous and provides adequate lighting given the 7-metre depth of the living room /dining room.

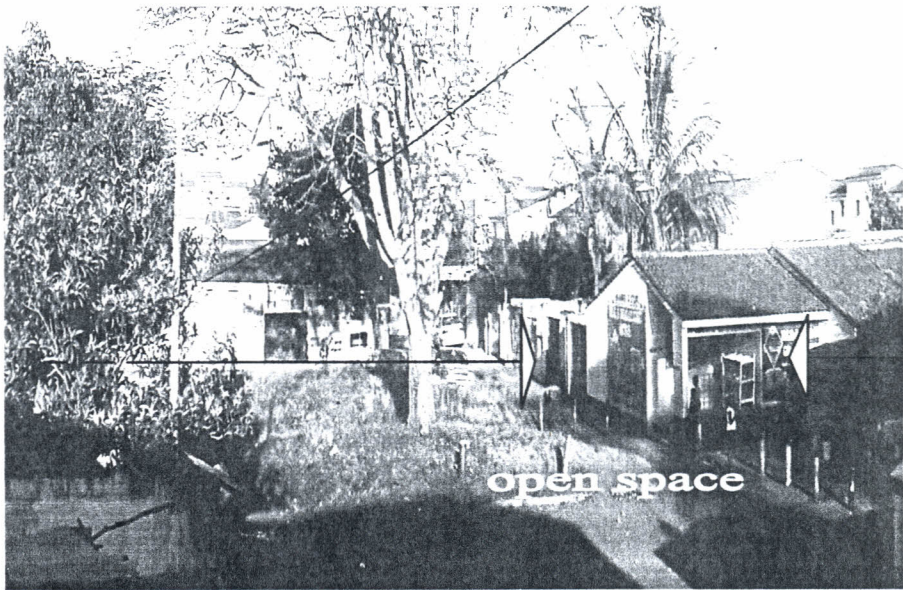
External doors in most houses have been burglar-proofed. The doors have been avenues for identity expression and uniqueness. The internal doors have remained the same except for the normal maintenance repairs. The absences of permanent ventilation on the walls and the low ceiling heights imply that the windows are the only source of ventilation in the dwellings.

### **3.2.6 Open spaces**

The uses of the spaces created by the nature of the courtyard design are strong indicators of the activities done by the residents and their attitude towards its maintenance. Human beings react to the quality of spaces around them. Large, wide, high spaces tend to create a pompous feeling while small, narrow low spaces can result in claustrophobic feeling. Well thought out spaces can moderate between the two extremes to produce very intimate and secure spaces. The people are the important element; the spaces should be scaled for their use. (GLC study 1975). The lack of territoriality has resulted in the neglect of these spaces by the residents. Most of them are overgrown with grass and weeds, as there is no one charged with the responsibility to have them mowed.

They have also become parking lots for extra cars at times the grounded cars not in use.

Originally meant as play spaces for the children, these spaces are not preferred by them. The tall grass and crawling insects would definitely be a discouraging factor. It is not uncommon to find the children playing on the hard tarmac roads instead of the designated spaces.

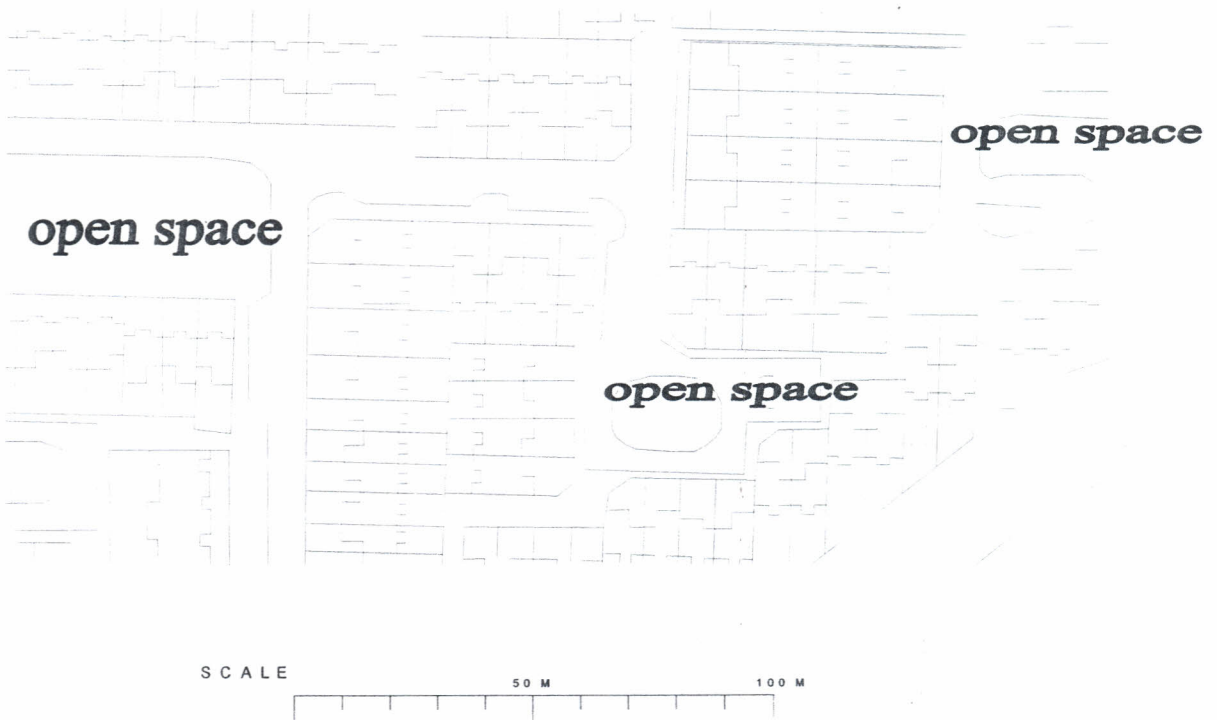


**Figure 3.11**  
**Typical open space at Eregero court**  
**Source: author**

The arrows point to an open space that has been completely neglected and become an area of dumping garbage. The tall grass is surely not inviting to the children. The hard tarmac foreground is more appealing for playing. The thorny acacia tree that was planted is also not conducive enough for good shade and its thorns are not friendly enough for recreation



activities. The mound does give a welcome relief to the otherwise plain open space and could be a great potential play area if well designed and thought out. Notice the attempt made to confine the vehicles within the parking areas using bollards. These have become seats for many teenagers who enjoy drinking at the shop.



**Figure 3.12**  
**Phase four layout**  
**Source: author**

### 3.2.7 The walls

They are space definers and in this instance provide the structural support for the roof and first floor. When finished in plaster and paint, walls demand constant maintenance. In phase 4., all the walls were finished in plaster and paint. This has proved quite expensive in the long <sup>run</sup> as new paint has to <sup>be</sup> done almost yearly to maintain the fresh look of the houses.



**Figure 3.13**  
**Plastered wall detail**  
**Source: author**

The full white paint needed to maintain the building is too costly for most individuals as evidenced by the obvious neglect displayed on the exteriors.

The use of natural stone and construction materials would have been more appropriate in this scheme. Little wonder that most of the extensions have opted for natural stone

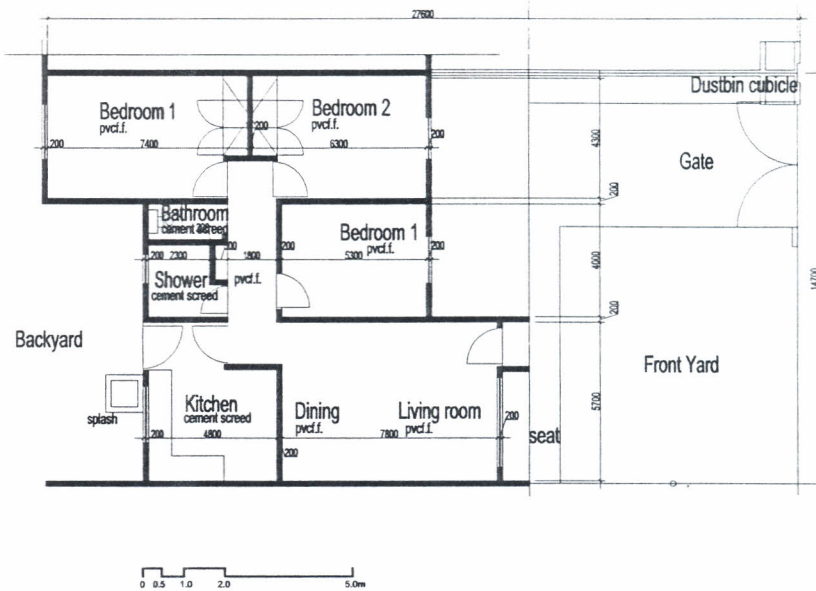


finish. Plain white walls are not appropriate for dusty place as Buruburu. Several residents have re-painted their walls with other stronger colours, which has helped in solving the identity crisis. Internal walls were originally finished in water paint but some owners have now used oil based paints as they could afford. Cases of water paint being used in the wet areas are quite widespread and it is so common to see moulds and mildew on the bathroom walls. Those who can afford have redone the walls of the wet areas and kitchen in ceramic tiles usually to a height of 1800mm.

### **3.2.8 The floor layout plan**

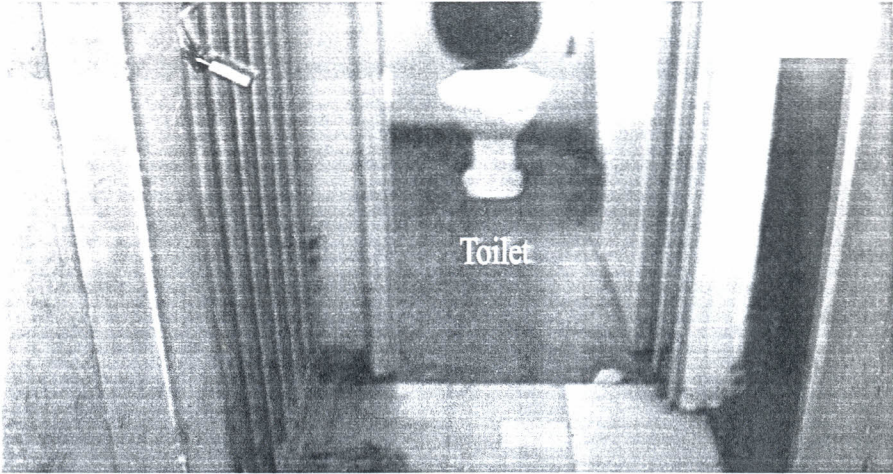
The layout of the floor plan has been modified by the users. There are instances where the dining area has been turned into an extra bedroom.

Most residents complained that the toilet downstairs lacks privacy. The passages are also too narrow to enable easy movement. See figure 3.1



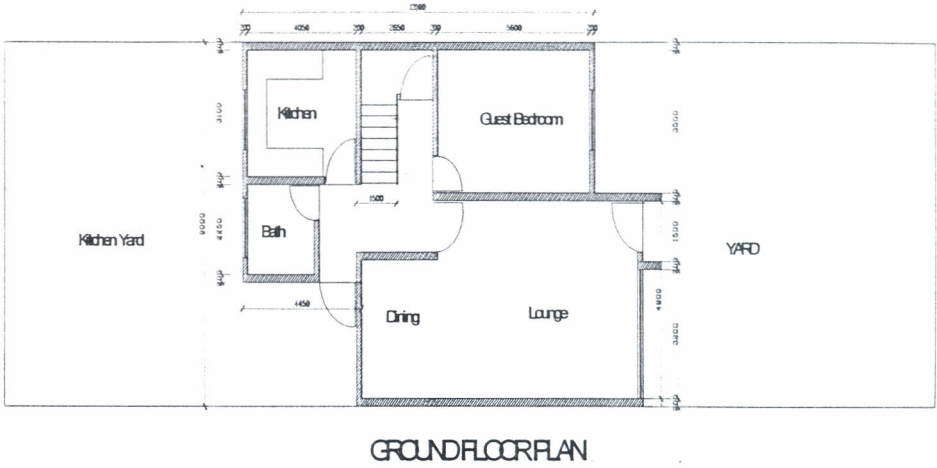
**Figure 3.14**  
**Typical bungalow floor plan layout**  
**Source: Mutiso Mennezes International**

The floor is the most used element of the house as it has to handle the constant wear and tear of everyone that comes to the house. The choice of a durable, affordable and an appealing floor finish is crucial. The original floor finish was PVC tiles on cement screed. Over time, they have had to be replaced with terrazzo, ceramic tiles or parquet. In cases where the users preferred to use the PVC tiles, they were done in more bold colours reflecting the taste of each user. Still many others have maintained the underlying cement screed after the tiles came out.

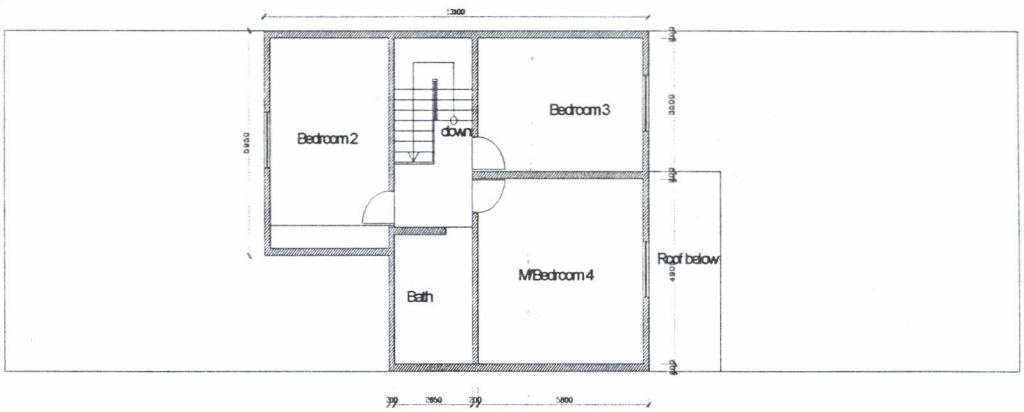


**Figure 3.15**  
**Pvc floor finish**  
**Source: author**

Notice the mixed floor finish of the corridor passage. The toilet is finished in cement screed, the passage in mixed colours of PVC. The timber skirting in most houses have been replaced with cement plaster skirting. The availability of affordable plastic carpets in the market coming in a variety of colours, and patterns has made simple cement screed floor more popular. Wooden Parquet have become less popular because of the relatively high maintenance costs of constant polishing and easy destruction by water.



**Figure 3.16**  
**Typical phase4 floor plans**  
**Source: Mutiso Mennezes International**

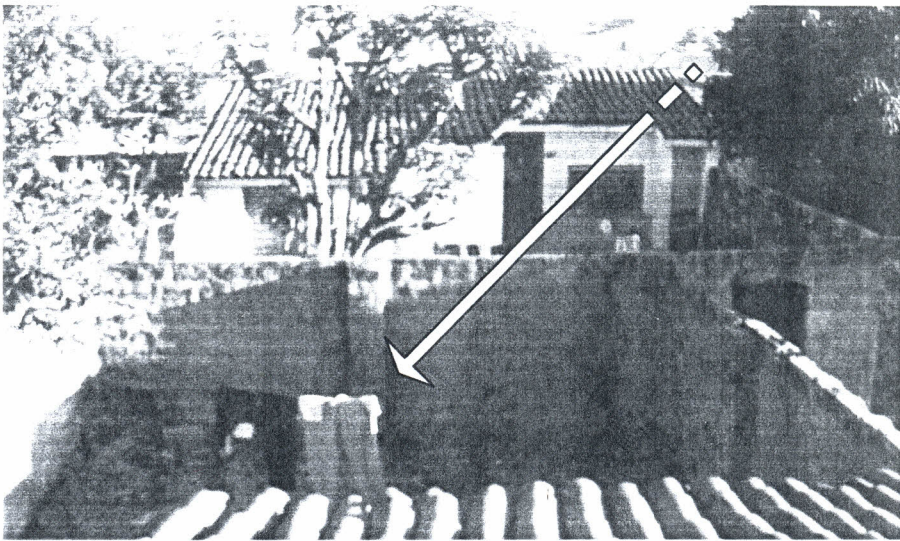


**Figure 3.17**  
**Typical phase4 floor plans**  
**Source: Mutiso Mennezes International**



### 3.2.9 The back yard.

The backyards are the most renovated part of the plots. The local authority permits extension of two rooms. The friendly climate of the tropics allow for multiple out door activities.



**Figure 3.18**  
**Back yard detail**  
**Source: author**

Some of the activities performed in the back yard include, washing and drying of clothes, food preparation i.e. peeling of potatoes, storage of junk items, accommodation, entertainment of friends, raising of pets, and sometimes domestic animals i.e. chicken. Some people grow vegetables, flowers and fruit trees. It is not uncommon for others to use it as their business premises i.e. workshops.



Yards adjacent to main roads are most insecure as burglars climb over them to gain access to the main houses. They are the most fenced and usually extend much higher in comparison to the others.

### **3.3 Design Shortcomings**

#### **3.3.1 Inflexible Design Scheme**

Houses seen as an end product remain the same over time. Other factors however are constantly changing. The economic state of families are always getting better or worse, causing them to want to move to bigger houses with better facilities. The children become teenagers so that play areas that were once useful become obsolete. The demographic size of families also change as some get born and others die. People grow old and with it come new preferences. All these demand that designers must be willing to consider long-term flexibility in their designs. Different spaces and facilities should be capable of handling future growth. The provision of only one parking space per family has resulted in most of the open spaces reserved for children play being taken up by cars. More house types to absorb higher levels of income could have been incorporated within the scheme so that a

relatively larger group of income variation could be accommodated without people having to consider moving out. The planning of the estate ensured that any change in income earnings would prompt a change to either more affluent neighbourhoods or more affordable estates.



**Figure 3.19**

The play areas and parking spaces have been transformed over the years.

Source: author

### **3.3.2 Insecurity through multiple exits**

The long narrow passages between buildings intended by the designers to encourage interaction between different house clusters have actually encouraged insecurity. Today we see many courts completely sealing off these passages to limit the entry of intruders to just one gate. The interaction that was supposed to be encouraged by use of a low fence

between houses never lasted as the need for security forced each household to build high walls thereby creating less interaction and community spirit.



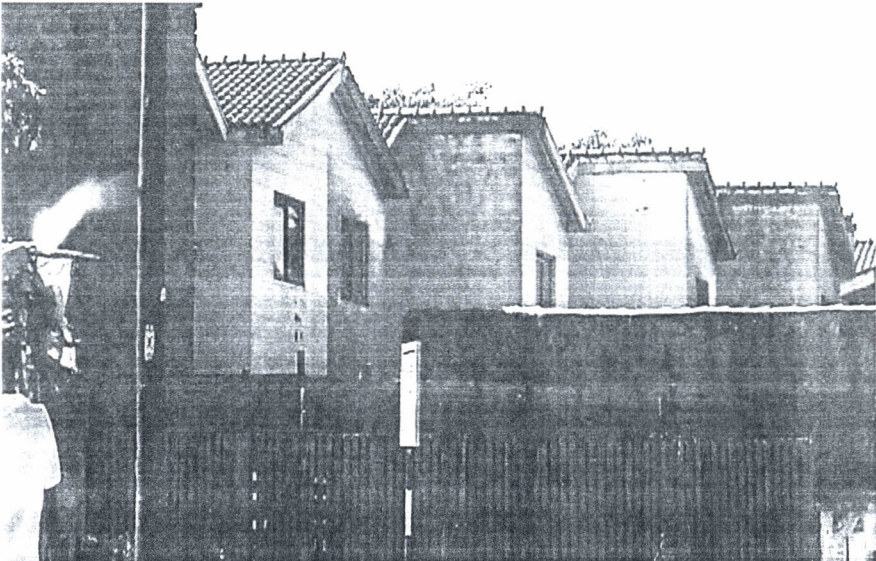
**Figure 3.20**  
**Alleys between houses**  
**Source: author**

Negative spaces between buildings encourage insecurity and littering.  
They also encourage negative behavior such as urination and rape.



### 3.3.3 Use of Inappropriate Materials

The use of cheap timber for fencing definitely encouraged the building of the high more durable walls. The large external wall areas finished in white paint have not been within the capabilities of the tenants. The natural, easier to maintain, stonewalls have been more successful.



**Figure 3.21**  
**Expensive white paint finish on external walls.**  
**Source: author**

Lack of maintenance results in unsightly look of the many buildings

### 3.3.4 Continuous Monotonous Image

The use of one house form though likely to minimize the likelihood of jealousy among tenants influences how residents feel about their “worthiness” as human beings. A degree of uniqueness to create a sense of place and identity is very desirable. People are different and should be to some degree allowed to express them. This could be done through use of color in the front porch.

Most designers however are wary of any additions being made to their projects, which is just not realistic. Only the house numbers identified various units in Buruburu I. Today you see people saying

“This is mine: it is a reflection of me/my family and I we are worthy and unique beings.”<sup>1</sup>

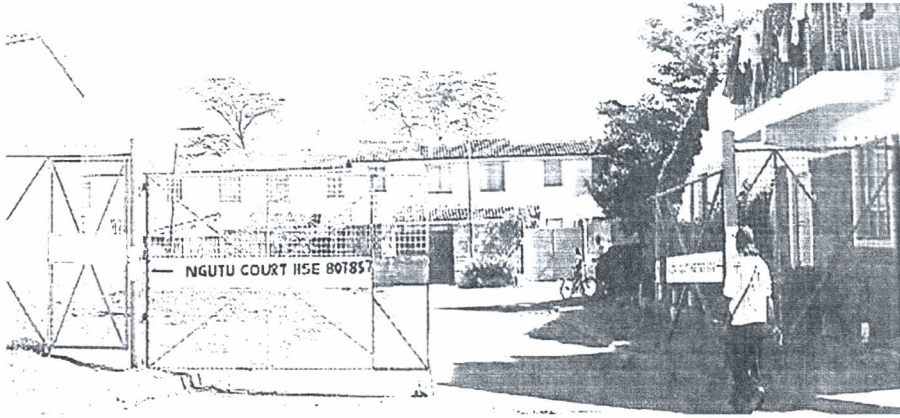
This is the idea Rapoport, A 1968 had when he wrote,

*The general symbolic and emotional ties with the house, the need to territorialize and personalize, the need for expression, maybe more important than physical flexibility, although they are related. Entry personalization through extensions.*

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<sup>1</sup> *Rapoport, A 1968, The personal element in housing: An argument for open-ended design, RIBA journal 75.*





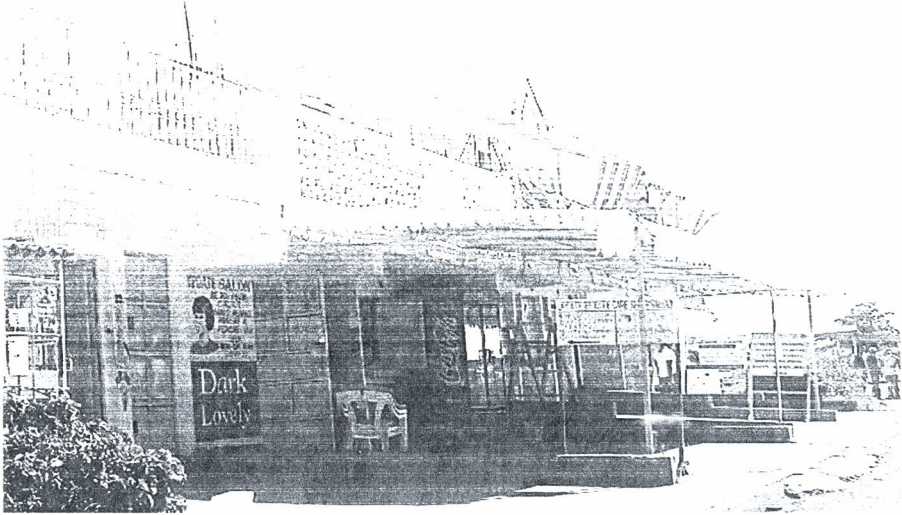
**Figure 3.22**  
**Monotonous façade**  
**Source: author**

### **3.3.5 Over introverted plan**

The courtyard housing system used in Buruburu I and II is generally a more socially and ecologically desirable form. It reduces the feelings of anonymity, makes public transport more economical and provides easy access to shared facilities. It also encourages social interaction for children, teenagers, adults and the elderly.

However, where there is some degree of street life or a busy road appropriate response should be made in the design and change in house type could be even desirable to take advantage of the pedestrian or vehicular traffic. That is what is happening in Buruburu II and III. The former housing units are now holding commercial activities such clinics,

nurseries and shops. It would be appropriate to design town houses to respond to the busy street atmosphere.



**Figure 3.23**  
**Developments adjacent to the main roads.**  
**Source: author**

## CHAPTER FOUR- SUMMARY OF FINDINGS

This chapter summarizes the design intentions of the architects and planners against the current user needs and responses. The writer has based the conclusions on an interview with Mr. Allan Simu of Mutiso Mennezes International who was involved in the project throughout its inception to completion. The drawings and photographs have also provided enough evidence to deduce conclusive trends. Through selective interviews and general observations, the extent to which the original design intentions are achieved in the present housing scheme is clearly seen. The extensions and renovations being carried out reflect the ever-changing user needs caused by demographic transformations, economic swings and technological developments.

The author has however limited his research to the spatial and planning issues. The scale of the project has necessitated a logical approach from a macro to a micro level, from the settlement level to unit level. The project has impacted on the neighbourhood both positively and negatively.

Phase 4 has been selected for a more detailed analysis. RARE court has been further analyzed to provide in depth study at the unit level. See figure 4.0



**Figure 4.0**

**Buruburu phase 4. Rare court**

**Source: Author**

## **4.0 Design intentions at macro level**

The influence of Buruburu estate at this level has been more positive than originally envisioned by the designers. Provision of communal facilities such as schools, places of worship, commercial centers, playgrounds and police station has greatly improved the image and standards of living within the neighbourhood in general.

The over all size of the scheme has made it very economical to spread the overheads minimally per dwelling unit. This has also translated in provision of street lighting within the estate to improve security.



Sewer, water and electricity supply has been cheaper to provide due to the large scale of the project.

#### 4.1 User response to size

*how many were interviewed?*

30 % of residents interviewed feel no sense of community at the settlement level. Apart from the name there seems very little in way of interaction. The scheme is simply too large to create any unity among the residents at this level. The attempt by the designers to provide different housing types for the various phases has helped create a minimal identity for the residents.

The communal facilities such as schools are not limited to use by the Buruburu residents but to all. In reality, more non-residents use the facilities than Buruburu populace. The security has been compromised at the settlement level, as most of the culprits are residents but from the neighbouring estates. One of the informal markets that have sprang up over time; Mutindwa open-air bazaar is notorious for harboring criminals

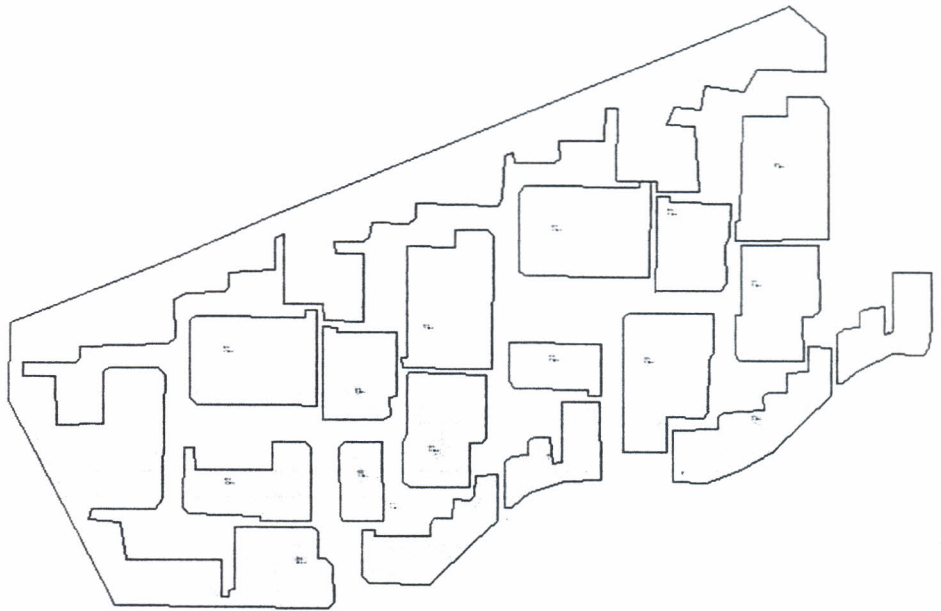


## 4.2 Roads and circulation

Design intentions vs. Residents needs.

The design of Mumias south road by the planners was intended to alleviate the traffic load along Jogoo road and outer ring road. This has been successful to the detriment of the residents who have to bear with the evening and morning traffic jams as most motorists to adjoining estates especially Umoja and Kayole opt to use the road.

The architects originally did cul-de-sac roads within the estate to ensure security by limiting points of entry and exit. The roads however; have been a nightmare for those looking for directions



**LEGEND**



**Figure 4.1**

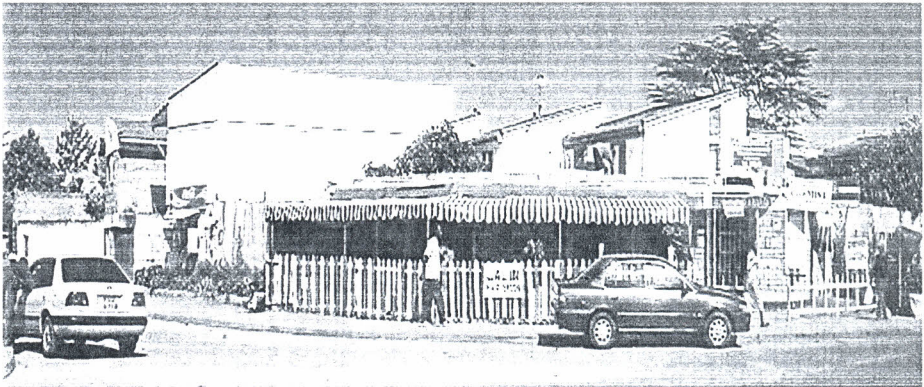
**Buruburu phase 4. Internal road layout and built area**

**Source: Author**

### **4.3 Extension and Renovations along Mumias south rd.**

The spine road cutting right through the development has been laden with commercial activities. Several plots bordering the road have been extended or developed into

large-scale commercial centers carrying out such activities such as retail, furniture, hair salons, Internet cafes, chemists and restaurants. In the original master plan, the only response envisioned was domestic quarter extensions. The corner plots and those adjacent to the road were given extra land, which has further encouraged the mushrooming of extensions.



**Figure 4.2**

**The corner plot restaurant.**

**Source: Author**

#### **4.4 Design intentions at cluster level**

One of the most successful aspects of the estate according to Architect Simu who was involved in the design and implementation of the project is the courtyard concept. It entailed several studies to determine the appropriate number of dwellers within a courtyard. It helped achieve the following:

- Increased security as residents can pull resources together and pay for security.

All the residents except for those who cannot get incorporated in the courtyard due to their positions along the road have all formed associations, which control and employ security agents for both day and night.

- Better interaction and bonding of the residents since the middle courtyard acts as a center of meeting and exchanging of views.

The majority of residents who have stayed together over the years have a great sense of community. This has been enhanced by the communal nature of the courtyard forcing residents to share play area for their children, parking and mini shops.

- Enhances surveillance and safety of children, the principle of eyes on the street.

Parents see who their children play with, they can watch of any dangers.

- Unique and pleasant, tried to kill the obvious monotony and linearity inherent in such large schemes.

The scheme is quite attractive as it provides a traditional African form of living where in most communities houses

were not just built in isolation but entire villages shared common open spaces and had a sense of hierarchy.

- All the clusters were connected with each other at pedestrian level through narrow escape routes ensuring a porous scheme

The designers intended to allow pedestrian movement within the development without people having to go round each cluster of houses. This they did by allowing narrow pedestrian routes between buildings. This must have been very successful before security became an issue.

- Provision of social amenities and overheads was greatly improved. Each court has been provided with a shop and grocery space.



## 4.5 User response

Most residents feel a strong sense of belonging. The courtyard concept has enhanced interaction.

Where residents belong to a court, they have formed associations to take care of security needs and general maintenance of the court.

The idea of a porous design has not worked as the designers envisioned. Instead, nearly all the escape routes have been closed up as they posed more security risks.

The concept of surveillance is overly stretched. The security response has paradoxically increased insecurity. Each dwelling unit has walls going up so that no neighbour by any mark of faith can know what is happening in the next compound. Cases of burglary taking place and the next-door neighbour knowing nothing are quite common.

Most of the original shops provided for the residents at the cluster level do not operate. The problem could be more of management and not design.

This should have been found thru discussions/ interviews etc

The open spaces designed for children are not used. Instead, they prefer to play on the driveways. This could be because of the nature of games children play need hard surface yet in most designs they are provided with lawns of green grass.

The concept of defensible space can be misinterpreted and misused to justify incorrect planning decisions. The contribution by Oscar Newman to the understanding of how inappropriate design can encourage vandalism and crime is remarkable. There are universal principles that will apply to design anywhere the world over. However, a blanket implementation of his theories to the Kenyan context can be disparaging. Though crime by any other name is still wrong, the norms and culture of a people determines its nature, prevalence and consequently the most effective methods of prevention.

The principle of surveillance would apply to Buruburu if the high front-yard walls were done away with. In the original design these aspect was quite successful. Residents could see who their neighbour was and what was happening in their neighbour's compound .The mothers could see where their children were playing and with whom. Yet, the high walls that now characterize the estate came out of the insecurity that became so prevalent.



**Figure 4.3**

**Boundary walling**

**Source: Author**

With such high boundary walls, the concept of eyes on the street is preposterous.

In a country where any middle-income household can afford to have a maidservant, the idea of having security tends to mean having someone at home all the time. When people get used to crime being committed right before their eyes and no one stopping to help or even say something, the idea of ‘eyes on the street’ may seem preposterous.

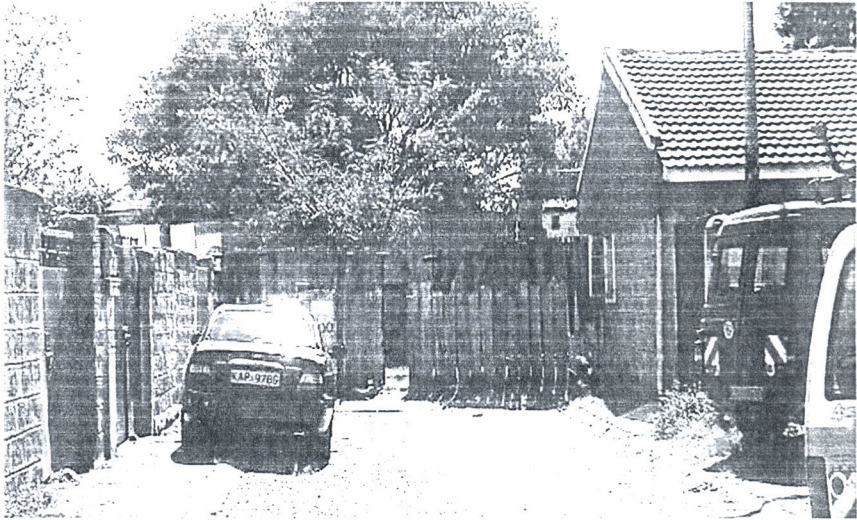
The scale and size of public housing in the west is far too huge for any direct comparisons with Kenya. There are no high-rise public residential buildings soaring to 10, 20

stories. We of course must take note and learn from their experience. The findings by Newman show how we can enjoy certain design benefits fortuitously.

The type of design layout in Buruburu is actually some of the design solutions suggested by Newman. The design advantages of cluster housing include the aspect of territoriality and surveillance. That insecurity is still experienced in the estate must mean that other factors other than those proposed by Newman also play a big role in determining the level of crime and vandalism.

On the contrary, over provision of security sometimes encourages more affinity to commit crime as the criminals suspect that there must be more on offer to warrant such excesses. Moderate security walls on the other hand do not attract so much attention. Individual units that conform to the general security standards tend to be safer than houses with unique and elaborate security gadgets.





**Figure 4.4**

**Plot boundary walls**

**Source: Author**

Typical security detail on the left and a unique wall done in timber off cuts in the background.

The humble background wall is less likely to attract high sophisticated robbery compared to their counterparts, which are also less likely to suffer petty burglary.

The height of the boundary walls screen off any form of surveillance or intervention from the neighbours incase of crime incidence. Reports from the Police confirm several car hijackings taking place within the larger compound of most courts in Buruburu.



## CHAPTER FIVE - CONCLUSIONS AND RECOMMENDATIONS

It would be appropriate to ask why Post Occupancy Evaluation is not so popular though its benefits are so clear.

POE is "*widely acknowledged but rarely practiced*" (Doidge, 2001).

The concept of testing design, checking for faults and mistakes does not go well with many designers. Twisting of facts, making excuses, blaming others, and going to any lengths to be right is preferable.

*We cannot listen to criticism, we cannot be corrected, and we cannot take suggestions to change. Our convictions are unshakable. Moreover, since we do not admit that our mistakes are mistakes we just keep making them.*<sup>1</sup>

Doidge (2001) argues that the greatest obstacle to POE studies is that professionals must guard their reputation and avoid litigation. In addition, there is no integration of POE methodology with professional architectural design services,

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<sup>1</sup> Stewart, J. (1999) *Bridges not Walls*, McGraw hill

and no clear economic incentive for conducting the POE in the first place.

The potential for bad publicity should problems be uncovered so soon after a large expenditure of public funds also make client based organizations be not so eager to support POE.

The miss match between designers' intentions and user needs are however not that difficult to understand that we should ask, *who will ascend into heaven to get it.*<sup>2</sup>

Indeed the evidence is all around us. There is nothing inherently wrong with changes people make to existing designs. They could be the product of new tastes, changes in technology, new ideas and not necessarily bad design.

Architects, planners and all in the design profession should learn to embrace positive criticism. And take into account all the parameters that influence users and as much possible accommodate the direction of the winds of change.

For example, the rate of urbanization in Nairobi is currently standing at 7 % per annum.60 percentage of Kenya's urban populations live in informal settlements. The 50 % urban poor in Nairobi live only in 5% of the residential area. Providing decent shelter for all is still an elusive goal for

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<sup>2</sup> NIV BIBLE Romans 10:8

Kenya and will remain so for a while. If designers and planners are not going to appropriately respond to the present economic and social realities of Kenyans, the housing schemes and master plans will never stand.

## **5.0 Allow for user participation in design**

The assumption that the professionals know what the users want is now proven not true. We have the expertise they have the needs; dialogue must be promoted to allow for proper communication.

He is not a good doctor who prescribes medicine before talking to the patient.

Marcus CC (1985) sentiments are true,

*Architects and planners who design housing schemes work under severe constraints. The most serious of these, and often the hardest to recognize, is the lack of input from the people who must live with their designs. The immediate clients are usually public or private agencies, not the eventual tenants<sup>3</sup>*

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<sup>3</sup> Marcus, C. (1985), *Housing as if people mattered*, University of California press, Berkeley and Los Angeles, California

To date there is no single completed government project that involved user participation in Kenya. The assumption is that the designers know what the users want. The agony is that most architects and planners live in conditions that are far removed from the users more so in low and middle-income projects. Conflicting interests are inherent with the developers seeking to make as much return from their investments as possible and the user getting the best at the least cost. The architect consults and engages in lengthy discussions with the developers and sadly not with the users. While involving participants in complicated public designs is a challenging task, more so where civic awareness is still very low, practical ways should be sought. Different levels of representation can enable the accommodation of everyone's interests. However, in diffuse and transitory neighbourhoods people with no long-term interest would rather move to better neighbourhoods than get involved. Other times it may be simply diversity in interests so that it is not clear as to whose interest need to be served. A democratic approach for reaching decisions in participatory projects is the way forward.



## **5.1 Revise planning regulations frequently to reflect changes in technology and population densities.**

Planning regulations such as zoning, building lines and density controls should be revised to reflect the present economic realities and technological changes. Wasteful building lines have encouraged encroachment of informal structures. In Buruburu for example, the corner, plots with generous allocations were found to be the most lucrative for illegal extensions. The high rate of urbanization calls for better technologies to cope with the provision of services such as power, sewer disposal and water. Where this has been achieved, it is proper to revise the old zoning allowances. Here we are, four decades after independence and yet irrelevant colonial legacies still abound our building laws. The city council department charged with approval of drawings is more concerned with the semantics of ventilation than the real design issues.

## **5.2 Overhaul the training of planners and architects**

Training methods applied at our schools of architecture is also largely responsible for the negative mentality and lack of compassion in the field. Irrelevant theories are honoured at the expense of practical reality. Narcissism is highly exalted and rewarded. Students in addition to the normal disciplines should be taught communication skills on how to learn and



ask questions. Medical training is both theoretical and practical. The last year in medical school is spent at the hospital Architects could learn from this. *Train a child in the way he should go and when he is old, he will not depart from it.*

Training at old age is difficult. The current Professional Development sessions conducted by BORAQS (Board of Registration of Architects and Quantity surveyors) should be encouraged.

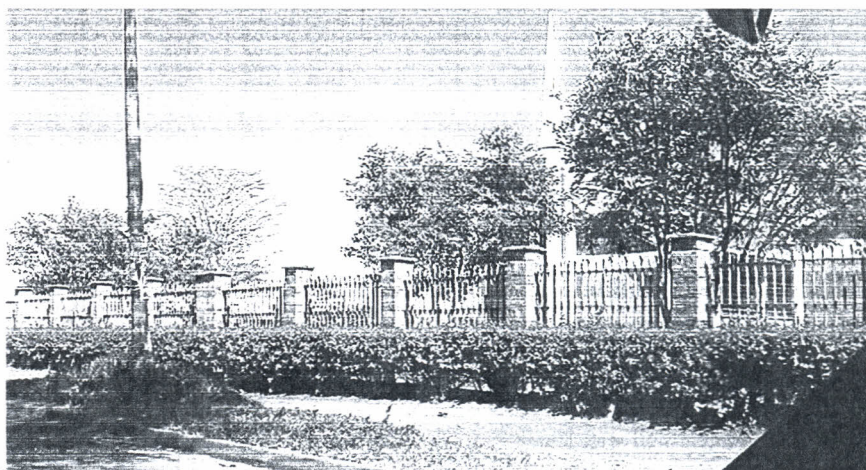
### **5.3 Provision of an enabling environment by the government**

To come to power, the current Kenyan government (NARC) promised to build 150,000 housing units yearly in urban areas, which is the current deficit in the market. It is not certain how far they have delivered on this promise. It is more feasible to provide an enabling environment for the construction of the same. Subsidize land, provide minimal overhead services and let people build at their pace, that is the natural way of growth. There are no resources to construct individual houses for all at the same time. Picking on a few politically correct individuals does not solve the housing problem. The government should provide the minimum basics and incentives to allow as many as possible own homes. The emphasis has often been only on the very low

income yet the middle income earners if not provided for will take up the houses meant for the very poor as is already happening.

#### **5.4 Road reserves**

Unused road reserves should not be left empty as this encourages unplanned hawking activities, which eventually degenerates into squatters. Appropriate landscaping with flowers as depicted in figure 5.1 below has actually worked for the area in Buruburu bordered by the church of later day saints. There are no kiosks or spontaneous selling activities taking place along the road.



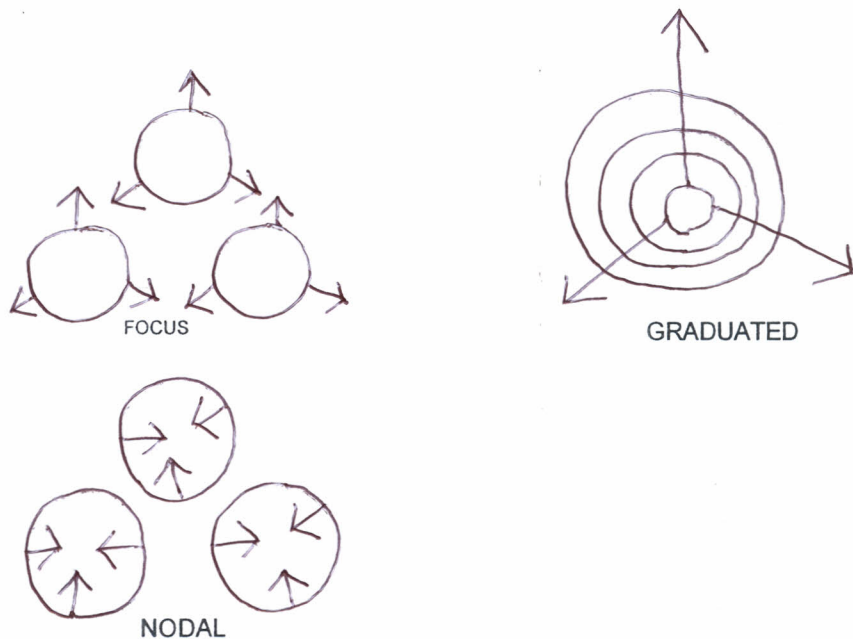
**Figure 5.0**

**Landscaping along Mumias south road in Buruburu phase 5**

**Source: Author**

## 5.5 Appropriate design response.

Planners and architects should consider the market forces in developing various design unit typologies. For instance, units adjacent to the road should have a character that enables them respond to the high pedestrian traffic. A simple duplication of one type of unit over the entire site eventually results in uncontrolled and unplanned extensions as the owners rush to take capitalize on the possible economic gains. The models below help illustrate four possibilities in working with cluster design.



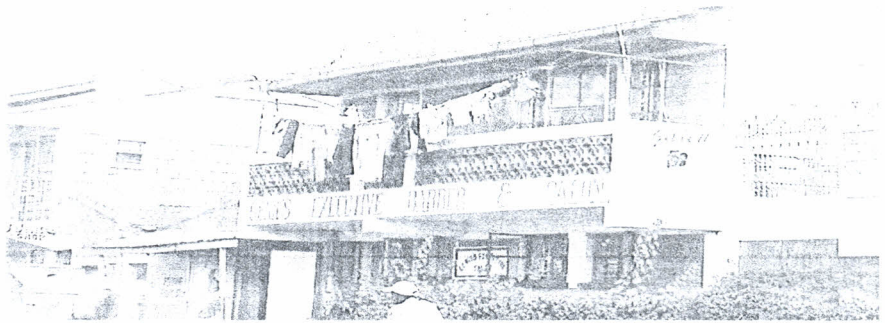
**Figure 5.1**

### **Cluster models**

Source: Adapted from "Site Planning for Cluster Housing" Untermann (1977)

Van Nostrand Reinhold

In the design of Buruburu, the architects and planners applied only the nodal type of clustering. This severely limited any user response to the busy Mumias south road.



**Figure 5.2**

**Commercial activities inside phase 4 Buruburu**

**Source: Author**

## **5.6 Suggestions for further research**

The days of intuitive design is well behind us now as the design briefs get larger and more complicated. Planners and architects must now be held more accountable. More methods of evaluating design projects need to be developed. The traditional roles taken up by the architects as master builders are no more. While not advocating a purely functionalist approach to design, it is important we learn



from our past mistakes and build on the rich history of what has been before us.

Design definitely is just one out of the many aspects that determine the success of a project, further investigations and research work is required to isolate the different factors that contribute to a successful scheme and try to establish any correlations among them.

Data on the nature of houses, sizes, user responses, user needs are severely lacking .The government and the local authorities could help in research by providing an enabling environment, keeping good records and up-dating the old records. It is sad that to date no government planning department in the ministry or at city hall have computers that could be accessed for information.



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