CRITERIA FOR NATIONAL PLANNING OF RESIDENTIAL NEIGHBOURHOODS IN GREATER KANTON

( WITH REFERENCE TO AL-SADDA NEIGHBOURHOOD AS A THIRD CLASS RESIDENTIAL AREA )

BY

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TO MY PARENTS,
BROTHERS, SISTERS
AND
TO MY HUSBAND • • •
لقد حل تنظيم الجبهة في الخروطين كجزء من المقاومة الداخلية التي تشن من الحوار في بين النظام التضامني مع المفاوضات الأساسية.

بصورة عامة فإن تنظيم الجبهة في الخروطين يكتسي منظماً داخلية في إطار الجبهة الاجتماعية والاقتصادية والبيئية، فكانت هذه المنظمة تتألف بيئة مرتبطة

عن نواحي السلوكي الاجتماعي لسكان الخروطين، وفيما وب在他的 تكوين، ومستويات الفصل، نوعية المخاطر والبيئية الخصبة للسؤال، وضوابط النشرة، الخاصية وتوزيع وتغذية الخدمات الأساسية للإنسان وتشريع الجماعة، وفروعها حيث تنتشر في حوارات تفاعليات المحافظة، حيث

ويما أن الجبهة الاجتماعية والاقتصادية لها أكبر أهمية بالنظر إلى الخدمات الاجتماعية التي يتوفرها للناس من خلال النشاطات الأخرى في المخاطر، كما أن النشرة لم تضمن أن تكون في نواحي في نواحي الفصل، وتبين قدرة الفصل في النشرة في أن تكون

وبعد الإطلاع على هذه الصناعة في الخروطين، والتي تتنوع من أربع مجالات تضامنية، تم وضع

الدراسة، تم تحضير وتلقيح دراستها الاستفادة التي تم تحليلها في بعض من الصناعات، بما على تجاوز

الصناعات، والتي تشمل المطابقة المالية للتمييز هذا الجزء من النظام. وقد ألغى الدراسة تقييم البيئة

الجبلية في مجالات الفصل، وإنشاء الفصل بجانب البيئة لاستغلال السكان في الفصل، ووضع الدراسة

ببعض نقاط ضعف الفصل، كضمان شروط البيئة، استغلال السكان وبدعم القرارات التي تتم بواسطة السكان بعد العناية في الفصل، اختتم الدراسة بتوصيات تتضمن بعض التغييرات

والإضافات التي يمكن تقديمها في الاستفادة من الفصل إلى بينه، جنبًا إلى جنب بعض ميزات السكان مسماة

وتوصيات أخرى عن تعديل تنظيم الجبهة في الخروطين}.
In Greater Khartoum the planning of residential areas is not well studied in order to produce residential environments which match the essential requirements of the residents of those neighbourhoods.

Generally, the neighbourhood plan is the outcome of the interaction of the various environmental standards, i,e the functional, social, economic, environmental, technical and legal aspects. All these aspects integrate together to give a physical residential environment which reflects the residents’ social behaviour, type of employments and income levels, available natural environment, level of infrastructural services and building constructing technology, which are all to be kept within the regulations and by-laws.

Social and economic aspects are usually the most related to the residents’ characteristics, e.g., they show the family size and distribution, social behaviour, aspirations, culture, religion and the level of financial affordability. They affect the layout of the neighbourhood, provision and spatial distribution of the open spaces, the social and economic facilities, the plot sizes, and the required level of accessibility to these facilities and to other parts in the city. However, this study focused on these two aspects especially for the low-income group who represent more than 36% of the population in Greater Khartoum.

Following the selection of Almehada residential neighbourhoods as a case study, its official plan proposal (1969) was analyzed and evaluated according to the international and local planning standards required for this part of the city. The study was reinforced by the evaluation of the existing residential environment along with concluding remarks that show the weaknesses of the official plan in satisfying the residents’ needs and difficulties they met as a result. Also, physical changes appeared during the life time of the neighbourhood were defined.

Certain recommendations were then suggested for Almehada existing neighbourhoods, and other general recommendations for the planning of residential neighbourhoods in Greater Khartoum.
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CHAPTER ONE
INTRODUCTION

This chapter gives a brief knowledge about Greater Khartoum covering its location, topography, climatic environment, its rise and growth and the development of its residential areas. The chapter also presents clear information about this study.

1.1 GENERAL BACKGROUND OF GREATER KHARTOUM:

Greater Khartoum, the National Capital of the Sudan, lies around the confluence of the White and the Blue Niles at latitude 15° - 30° north. It comprises a large metropolitan area composed of the three towns Khartoum, Khartoum North and Omdurman and numerous satellite villages (Fig 1.1). Khartoum Province which comprises less than 0.4% of the total area of Sudan, is predominantly a flat plain the only significant relief feature on it is Markhiyaat mountains north-east of Omdurman.

The area enjoys a semi-arid tropical climate. Mean maximum and minimum temperatures are 43°C and 18°C respectively, in summer; 37°C and 10°C in winter. The rainy season generally extend from July to October with an average of 150mm. Sandstorms prevail during most of the summer.

The confluence of the two Niles developed through different political structures. In about 1831, a certain religious leader of Almahas, Faki Arab Abagrel, left Tutu Island and settled in Khartoum where he began to teach principles of Islam. A large number from Jazilin and Mahas tribes were attracted by his teaching and settled around him and the village of Khartoum came into being. Two of the famous students of Faki Arab were Sheikh Khosaili Abdaroma and Sheikh Ahmad Wad Um Marloa. They

Fig(1.1) MAP OF GREATER KHARTOUM

Source : General Map of Greater Khartoum 198
(Cited by Hamid, G. M.,) Sudan Survey Department.
moved to what are now known as Millat Khogali and Millat Bazar in the present Khartoum North.

During the Turko-Egyptian period (1821 - 1885), construction improved and within a short period of time the town developed into an important administrative and commercial centre[1]. This generated population movement from the countryside into the capital city, while Omdurman and Khartoum continued as small villages.

During the Mahdia period (1885 - 1908), Khartoum was completely destructed except for the dockyards, gardens, and some tombs. Omdurman was developed into the capital of the newly independent Sudan. Its streets were generally narrow and winding and had a bad standard of sanitation[2]. Population were segregated along tribal and religious lines, and each tribe or religious group lived as a closed community by itself on its own quarters. The city then continued to receive an influx of people particularly from Western Sudan.

During the condominium period (1898 - 1956), Khartoum was rebuilt by Lord Kitchener as the new capital of the Sudan along modern lines as an European town. During this period the majority of Sudanese lived in Omdurman and Khartoum North, while in Khartoum they were accommodated out side the city proper in Old Belts (low-income classes residential area). Khartoum confined to the area north of the railway loop up to 1945, and was the most important administrative, commercial and educational centre in the country.

After independence (after 1956), governmental centralization became more emphasized with substantial concentration of commercial and industrial enterprises. This pulled the migrants into the city leading to a remarkable expansion in the built-up area of the three towns.

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1 Albouazy, E., op cit, p 23-41.
2 Abu Salim, M. J., op cit.
1.2 SELECTION OF TOPIC:

This topic has been chosen mainly for two reasons. The first is a personal interest to know more about the planning of the residential neighbourhoods in Greater Khartoum.

The second is to study the general criteria which those plans should be based on in order to reach a physical residential environment that expresses the residents’ essential requirements.

1.3 THE AIM OF THE STUDY

The general aim of this study is to review the basis on which the planning of the residential neighbourhoods was attempted in Greater Khartoum. Also to select one of the most representative neighbourhoods (in terms of size, location and the level of community settlement) and to study the deficiencies (i.e. the provision of unsatisfactory services, the neglect of some social facilities, ....etc) of its plan of satisfying the residents demands and to suggest certain recommendations for the rational planning of these neighbourhoods. The study is meant to be useful for the residents at large, as well as professionals, students and other researchers.

1.4 SELECTION OF CASE STUDY

Since the third class residential area represents about 80% of the residential areas in Greater Khartoum, this study was suggested to be applied to the third class residential neighbourhoods. The need for the residents’ response to their neighbourhood plan makes it more successful to select an existing planned area that contained a settled community at the present. Following a wide study on the planning on the residential areas and the plan of Greater Khartoum, it was decided to apply the study to one of the neighbourhoods which were planned in the 1960s. During that period a number of the present third class residential neighbourhoods were planned in almost a typical design. Alshaha in Khartoum, Almadad and
Albugyousif in Khartoum North and Alboura in Omdurman were representative examples of these neighbourhoods, (Fig 1.1). After some site visits to those areas Alshaha was chosen for this study for three more reasons. The first reason that it contains a large proportion of the third class areas, secondly most of the residents of Alshaha came from the same original place which was Khartoum South. Nevertheless they were either relatives and/or long-term neighbours, who had similar social characteristics and strong social interaction. Thirdly, the selected area could easily be reached for the purposes of the study.

1.5 METHODOLOGY OF THE STUDY

The method followed in this study started with the literature review which covered the already written information about the planning of residential areas and the neighbourhood approach discussed internationally. Also the methods followed in the planning of the residential areas in Greater Khartoum were reviewed and discussed.

Data was collected and variety of information was obtained as required by the study. Four complementary channels were adopted, each with its potentials and limitations. The first comprises documents: a number of local studies and researches and several aspects of the subject, National Population Census undertaken in 1973 and 1983, the Central Statistical Department Enumeration 1990, layout plans, aerial views from the Department of Survey and photographs for selected parts taken by the author. Secondly, interviews were held with some officials, e.g. at the local council of Alshaha neighbourhood, the relevant Ministries and with some randomly selected individuals including different age groups in the selected neighbourhoods. Simultaneously with these interviews, a questionnaire was run for a sample of the population of Alshaha neighbourhood mainly to get their opinions and reactions to their neighbourhood plan and the existing physical environment. Alshaha residential area is composed of four neighbourhoods and each two are laid similarly (either north-south or east-west). The
example covered about 150 families. Frequent visits were paid to the field during this period and a considerable amount of the information was collected through direct observations.

The collected information was then analysed and the analysis focused on the appropriateness of the plan of the selected neighbourhoods according to the theoretical standards. The present situation was then evaluated with regards to whether the residents of Almahafa were satisfied or not and how did the design of the planners compare and contrast with residents' evaluation. The relationship between the neighbourhoods was assessed in terms of physical layout and the residents interaction.

The outcome of the study then explained the shortcomings of Almahafa neighbourhoods plan. It also explored the residents' needs in the plan of their neighbourhoods and the existing physical changes they noted. Next, recommendations for possible remedial actions were suggested at the final stage.

1.6 Method of Presentation of the Study:

This study is presented in seven chapters. The first chapter briefly explains a general picture of Greater Khartoum and of this study. The second chapter discusses the theoretical basis for the planning of residential neighbourhoods. The third chapter shows the planning of the residential neighbourhoods practised in Greater Khartoum including the Master Plans' proposals. The fourth chapter analyses the general socio-economic characteristics of the population of these areas and of Almahafa neighbourhoods. The fifth chapter shows the analysis and the evaluation of the official plan of Almahafa neighbourhoods. The sixth chapter explains the further evaluation of the existing neighbourhoods showing the deficiencies of the plan through evaluation of the residents' requirements. The seventh chapter shows some concerning remarks about the general planning of the residential neighbourhoods and the plan and the existing situation of Almahafa neighbourhoods. It also states final
recommendations for Alsahafa neighbourhood plan, and guidelines for ameliorating the residential neighbourhood plans in Greater Khartoum.

A list of reviewed references, other sources of information and a questionnaire form are presented at the end of these.
CHAPTER TWO
THEORETICAL BACKGROUND

2.0 INTRODUCTION:

Before the analysis and evaluation of the neighbourhood planning is applied to the residential areas in Greater Khartoum, it is a prerequisite to review the criteria required for the planning of the residential areas, and how will the planning of residential areas be rationalized to accommodate certain residents. Discussion will also cover the meaning of the neighbourhood unit approach in planning to give a reference on which further evaluation can be based.

This chapter will also show theoretically how can certain residents, who have their own cultural values and socio-economic characteristics, influence the planning of their residential areas in a certain environment which has its own legal and technological characteristics. However, acting together with the scientific standards, these criteria can lead to the "ideal" plan required for the residential neighbourhood in question.

2.1 GENERAL CRITERIA FOR THE PLANNING OF RESIDENTIAL AREAS:

It can be said that the physical planning arrangement of the environment is the output of the integration of the different aspects of the environment. The literature reviewed will show these aspects and discuss the role of each in the planning of residential areas and how do they act as collective criteria for these areas planning.

Residential areas particularly reflect social, cultural, economic and demographic characteristics as well as environmental conditions. These take place jointly with the functional and aesthetic quality of the buildings, open areas and land forms and natural features of the area to create the physical environment. Paul stated in his book "Ecology of Planning":

"Climatic considerations, local habits, trends, needs, standards of living and population composition should
also be taken as important planning criteria[1].

Moreover, residential areas are seen to maintain a good measure of communal objectives and individual aspirations, which are primarily derived from basic psychological, physical and human needs[2].

However in the following more detailed discussion will be carried out.

2.1.1. Social Aspect:

It was suggested that there is a general agreement that the city's social and economic life reflects the urban area's physical arrangements[3]. This view ensures that there are important relationships between the physical plan and the social behaviour.

In planning residential areas both planners and social scientists are involved considering behaviour patterns and interaction patterns between the different residents as well as the service networks and building design. Here the planner can be seen as a manipulator of supply; he investigates residents aspirations and actual human needs. Ann Butterfield[4] thinks that the study and analysis of the social behaviour of residents within a residential area are to be summarized in about five levels: those are; the person within the society (social-psychological level); person interaction with activities and circulation patterns (behavioural level); person's images (cognition, mental maps); the population characteristics (geographical level) and the inter-family life. She links to the people's demand for a residential area environment through their behaviour and aspirations.

The cultural factor is also introduced within the social

aspect since the physical environment is said to be a mirror of culture. It is probably that in any settled society, environment and culture are adjusted to each other. They work together and an understanding of both is necessary in order to understand the quality of life.

Lynch[1] argued that we can predict the spatial environment from the culture or vice versa, and similar cultures occupy similar environments. He continued that societies often borrow environmental features from others but without necessarily changing their own social patterns. Hence the social characteristics and culture suggest the actual human needs of the residents of the area in question.

2.1.2 Economic Aspect:

Physical planning proposals usually focus on economic aspects as part of the important set of problems including social and political aspects.[1]

The type of employment of the residents determines the level of income earned by each group. The level of planning proposals, health and welfare created in a residential neighbourhood are usually evaluated according to the socio-economic status of the residents. The level of income may also affect the level of affordability of the residents, level of services provided, networks, house type and size, the residential density and the physical layout.

2.1.3 Environmental Aspect:

This aspect comprises the behavioural and the climatic environmental aspects:

i. Behavioural Environmental Aspect:

The relation between environment and behaviour can be explained as mentioned in the following:


Just as our surroundings influence our behavior during childhood, so the quality of our home environment contributes to or hinders well-being through life.\[1\]

Environment occurs within the physical framework of the urban residential area which is considered as the place for people to sleep, relax, prepare and consume meals, interact with each other and with surroundings and perform other activities. Planned environment includes certain physical factors; these in themselves constrain behavior or permit it. They help determine the human movement, location, orientation, privacy, density and proximity, all of which are influenced by the presence, absence, planning of barriers, objects and other physical elements.\[3\] The various aspects of that designed environment also provide consequences, intentional or unintentional, present or absent, positive or negative. They tend to control movement and occupancy, people go to some location or avoid it, they leave some location or stay there for some reason if it is uncomfortable, inconvenient, effortful, disagreeable, unpleasant, threatening or painful.\[4\] So planners could better create physical environment which in a sense encourages behavior which people need or simply desire to engage in.

II. Climatic Environmental Aspect:

Within the residential area environment, the planner is pre-eminently concerned with the climates of the open spaces, particularly the circulation of wind and the penetration of direct sunlight, both of which may be affected by the width-to-height ratios of buildings.\[5\] In addition the design and arrangement of buildings, by affecting local temperature and wind, may exercise a considerable effect on pollution concentration.

To gain comfort within the residential environment both

human needs and climatic conditions should participate in the planning of the physical environment.

2.1.4. Aesthetic Aspect:

About this aspect, Catanese stated:

"There are two human drives that affect individual reactions to experiences that are pleasant or unpleasant. One drive is towards order and logic and the other towards complexity and surprise. Individual response to these factors can be affected or changed."  

Reinforcing the above statement, there is no simple definition of what is aesthetically correct because this depends upon culture, individual needs and previous conditioning.

For any single instance of the design of the city (obviously residential areas are considered included) simplicity or diversity is most important and can be determined by the context of design decision. The need of the users of the environment becomes a factor in identifying the aesthetics of the urban area design.

Aesthetic studies most useful for planning a residential area are those which link aesthetic satisfaction with the process of perception. It is the interaction of what we sense and our response to it. For these areas which are considered aesthetic they are frequently able to produce strong cognitive maps and this is a psychic satisfaction.

2.1.5. Technical Aspect:

For any physical plan, it is very essential to satisfy the existing level of technology and available resources. Thus, the plan will be kept within the available building materials, the available infrastructural services, the level of construction techniques and other implementation methods and abilities. Considering these factors more realistic plans can be created for execution.

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1 Catanese, N. J. and Snyder, J. C., op. cit., pp. 21
2.2. THE NEIGHBOURHOOD APPROACH IN PLANNING RESIDENTIAL AREAS:

2.2.1 The Neighbourhood Concept:

The neighbourhood unit approach is promoted from the design to break down the city into manageable units.\(^1\) It can be considered as the basic module of the urban order, large enough to support services and small enough to promote social integration and togetherness (for developed nations about 200 dwelling units is optimum) which are systematically achieved according to the size of the community as a whole. Generally the physical, social and economic characteristics of one neighbourhood are usually homogeneous.\(^2\)

The neighbourhood planning concepts resulted both from the neighbourhood demands and from the recognition by planners that the modern city is an organism composed of individual cells or neighbourhoods. It then offers an ideal unit in which to concentrate planning programmes.\(^3\)

For residential planning, the neighbourhood unit theory was designed as a basic module in order to promote identity, sociability, convenience, accessibility to communal facilities (which are integrated with residential area planning), safety and public hygiene and to help in the hierarchical organization of facilities, services, administration, circulation abilities and physical order\(^4\).

2.2.2. The Planning of the Residential Neighbourhood:

The process of developing neighbourhood plans is quite different from that for comprehensive or C.B.D plans. It relies much more heavily on community organization and participation by the residents, property owners, and business persons who service the area. There is usually some political support and opposition or at least conflicts.

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of the neighbourhood plan. Planning facilities available in any neighbourhood should satisfy the different residents with differing ages, economic activities and other characteristics. \(^1\)

Thus, the neighbourhood can be as a vehicle for personality growth through activities induced in groups having interests in common. \(^2\)

For planning a residential neighbourhood, the following requirements should be satisfied:

a. Safe residents movement.

b. Population large enough to support an elementary school (3000 - 5000 with an average of 5000).

c. A focal centre of local commercial, social, educational and communal facilities.

d. Optimal density for catching clean air, sun and green open space.

e. Maximum walking distance for children to school or playground with no vehicular interruption (i.e. < 500 metres).

f. A group of services and facilities which service a group of neighbourhoods, like secondary school, library, shopping..., etc, in an area accessible to all.

In hierarchy and groupings of accommodations continue progressively to higher levels up to the C.B.D, which contain activities and facilities that service all areas. This can be achieved through the following:

\(g-i\) Daily communal facilities are placed within the local residential neighbourhood.

\(g-ii\) Other community services are located in higher urban nuclei.

\(g-iii\) For local centre, limited size facilities will be laid (shops, clinics, schools, branch libraries, government services,...etc) in the neighbourhood.

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\(^1\) Cameron, A. F. and Simpser, J. C., op. cit., pg 50.

\(^2\) Asdour, T. A., op. cit., pg 18.
2.2.2. Residential Density:

In human terms, density is seen as a matter of number of people per unit area. Aton Rapoport (1969)\(^1\) thinks of the density as the form of arrangements of people in space, the defence they use to control interaction, the nature of the social group, the nature of boundaries and so on, i.e the relationship between people and people, people and objects, which will play a role in the perception of density.

Density can be seen either in terms of perceived environment where it is in the relationship among elements (light, spacing, etc), so that it can be hypothesized that high density can be related to high degree of enclosure, high activity level and many uses; since all these tend to result in high rates of information from the environment itself.

Rapoport and Kanton, 1967; Rapoport and Howkes, 1970; Rapoport, 1971\(^1\), gave the formulation that areas identical in terms of people per unit area may have very different perceived densities.

For planning residential neighbourhoods, it is essential to consider the relationship of given social-cultural groups to traditional density figures (people per unit area). So clear understanding will be needed for the various physical cues and the effects of social and cultural factors such as homogeneity and lifestyle on the perception of density and its evaluation leading to effective density and its effects.

2.1 CONCLUSION:

Going through the above discussion, the following can be

---

2 Rapoport, A., 1971
concluded;

i. It cannot be said that the residential area which is
developed on economically sound lines is satisfactory
if at the same time it is ugly and depressing, nor can
we consider a technically well planned residential
area satisfactory if it has been designed on
uneconomic bases. Well planned residential area
should satisfy the social, economic, environmental,
technical, aesthetic and political aspects of the
residents.

ii. Social and economic aspects are the fundamental
factors which have a direct relation to the residents,
because they give rise to their relevant demographic
characteristics, cultural and behavioural qualities
and their level of social and communal interactions.
Nevertheless, economic aspects show their income
levels that affect their aspirations. This can be
clear on limited income residents. However, in this
study, analysis will be based on the socio-economic
characteristics of the residents rather than other
factors.

iii. The neighbourhood unit can be considered as a module
to achieve controlled planning. It contains
homogeneous physical, social and economic
characteristics.

iv. Residential neighbourhood planning relies much on the
participation programmes so that the real demands will
be promoted by the residents and other beneficiaries
who exist in the area. Thus, integrated with planners
study, these needs will be provided in the plan and
then in the physical neighbourhood considering the
general layout, the provision of infrastructural
services, social and economic facilities and the level
of accessibility within and around neighbourhood.

v. Hierarchy of accommodations, grouping of services,
optimal density, optimal walking distances and safe
pedestrian walks are essential factors in planning a
residential neighbourhood.

Detailed characteristics and standards to be applied
In a certain neighbourhood, especially those locally adopted for the planning of residential areas are presented in the analysis stage. This will facilitate the evaluation process of local neighbourhood plan.
Chapter TWEE

General Background of the Planning of Residential Areas in Greater Khartoum

3.0. Introduction:

This chapter will discuss the previous attempts to the planning of residential areas in Greater Khartoum showing the criteria which they were based on. The chapter will start with the planning of residential areas before independence and continues to give a background about the planning machine in Sudan and the achievement of the planning projects after independence. Also attempts to the planning of residential areas of the three Master Plans designed for Greater Khartoum after that time will then be discussed. An outcome will then be explained in the concluding remarks.

3.1. Planning of Residential Areas Before Independence (Before 1960):

In 1905, the layout of Khartoum city was elaborated, the new residential areas were planned along the banks of the Blue Nile. The First Master Plan for Khartoum and Development provided by W.H. Nitsch, the Municipal Engineer, was proposed for the expansion of the town to the east, south and west. The principle behind that plan, as he wrote:

"Khartoum is a typical desert city. The principle of town and house planning requires certain modifications in the tropics and the problems are accentuated by the fact that usually a portion of population is not in their natural form and are therefore not in accordance with their environment."

Kunduzum was crowdedly built of "Waloo", mud. However, planners faced more problems in designing its layout compared with Khartoum and Khartoum North. Khartoum

North was totally new except Hillat Hazad and Hillat Khogali.

The Development Plan divided the town of Khartoum into three main parts; the most northerly just facing the Blue Nile, was the governor quarters, the central part was for the main market and places of worship, the third and last was for residential purposes which was also divided into three building classes.

The First Class area, comprising buildings of permanent materials, situated in the eastern part of the town, on the Hurran area and on the area south-east of the Railway Station. The area of the plot was about 2000 square metres. Buildings were one or three storeys high. The Second Class area was built in gishts and with mud brick facing. This class area lies slightly south of the Town Centre and north of the Railway Station. A second class area was also built in Khartoum South expansion with 300 square metres plot size. The Third Class area was introduced in 1942 when the town was in need of expansion south of the railway line (fig 5-1). Building materials were temporary ones. The plan provided for native lodging areas outside the ring, created by the railway line, for low-income groups.

By 1949, the old native lodgings (Deims) were removed and planned extensions of the three towns including first, second and third class housing areas. Khartoum North, after linked to Khartoum by the Blue Nile Bridge in 1910, the rural people found it cheaper to live in it (low land value) than in Khartoum. Its layout was based on the traditional grid-iron pattern with no diagonal streets. Residential areas had no great differences among the blocks except in the First and Second class areas facing the railway line. Khartoum North had a pleasant public park at the centre.

In Khartoum, the residents of those Old Deims, south of the railway line were;

*Hassan, S., "Historical Background of Khartoum Province". Khartoum, 1974, pp 2.
Fig. (3.1): CLASSIFICATION OF URBAN LANDS IN
GERATOR KHARTOUM (1965).

The natural growth of the population, the influx of many people into Khartoum during the Second World War years increased the overcrowding in the "Old Deima". They were in blocks of approximately 100 square metres divided by 40 metre roads, being free from traffic, with extensive "open spaces" within the blocks. The houses were divided by 5 metre lanes which were straight and not excessively narrow compared with those of Omdurman.

By 1930, 1939 and 1946/47 attempts were made to solve the squat conditions prevailing in "Old Deima" but they were unsuccessful because the plots planned for resettlement were small in size (5mX10m). By 1946/47, the Replanning Scheme was approved to amalgamate two or more plots to make larger plots (10mX20m). Those "Old Deima" were classified legally as Fourth Class areas.

The new Deima followed the grid-iron layout, communal open spaces and service roads with access to open spaces from which through traffic was eliminated. Grouping of houses, roads and fine court yards encouraged the growth of small communities, and some corner shops were also provided.

The First and Second class residential areas of the south expansion were laid in a pattern different from the traditional grid-iron. Curved roads were introduced and straight north-south roads were avoided. Ahamgar First, Second and Third Class areas north-west of the town were also planned in a different layout which was not grid-iron.

3.2 PLANNING OF RESIDENTIAL AREAS AFTER INDEPENDENCE (AFTER 1956):

5.2.1 The Planning Machine:

After Independence, a new planning ordinance (Town & Village Planning Act: 1956) was formulated, under which the

Minister of Local Government would control all town and village planning. Under this ordinance, the Minister will re-establish the Central Town Planning Board (C.T.P.B.) which advises him in the exercise of his powers. The Minister of Local Government, according to the Town & Village Planning Act, 1961, is responsible for the direction & control of all town and village planning for securing effective co-operation between Central and Local Planning Authorities, and for securing local initiatives as in consistent with development on principles of physical planning (1). Present, this is made up of the Ministry of Housing & Public Utilities, Department of Housing.

The C.T.P.B. is composed of ten members, five of whom are ex-officio members and the rest to be appointed by the Minister from among persons qualified in physical planning and/or persons who have experience in this field and the Government Chief Town Planner being one of them.

At the regional level the Province Executive Council aids the final planning authority as far as village planning is concerned except for variation, extension and creation of village boundaries and formulation of laws and major planning policies such as location of major industries and regional planning which has to be approved by the C.T.P.B. At the local level, town and rural councils were the initiators of planning schemes within their boundaries, they have not an approving or refusing authority, but they put their recommendations for the C.T.P.B. in case of classified towns, or to the Province Executive Council in the case of villages.[1]

3.2.2 The Residential Areas Planning Projects:

After a series of legislations for disposal of urban lands in 1917, urban planning renewal in 1950 and village and town planning in 1956, it was decided that the town growth was to be controlled by the planning projects. Accordingly, the Desiads Consultants were

commissioned to prepare a master plan for Greater Khartoum in 1958 for the period 1961 - 1981.1

During the nineteen sixties, a large number of the existing residential neighbourhoods were planned and distributed as site and services schemes. Examples of those residential neighbourhoods are those of Alshahafa in Khartoum, Althoura in Omdurman and Almaziid and Alhagousif in Khartoum North. They have almost similar plans of the Third Class. Alshahafa, almost the largest of them, was planned to accommodate the population of Khartoum South and the low-income government employees. At that time, the condition in Khartoum South was very crowded, thus residents called for a better residential environment (at that time most of the newspapers wrote about that slum condition, especially Alshahafa newspaper, from which Alshahafa name was derived).

After that time, other residential neighbourhoods were also planned and distributed e.g. Alryad in Khartoum, Mabiit Ahdel in Omdurman and Barahalas in Khartoum North as First Class areas and Abu Adam in Khartoum as First, Second and Third Class areas.

IMPLEMENTATION OF 3.2.1 Doxiadis Master Plan (1961 - 1981):

This plan covered the whole area of the existing town at that time and provided for the creation of new residential communities and industrial zones, fig. (3.2). It was based on a clear hierarchical planning structure classifying the whole urban area as a community class VII. The average town was classified as an urban community class VI e.g. Khartoum, Omdurman or Khartoum North, composed of several communities class V which were its various residential districts, (population size = 36000),fig (3-3).

The community class V consisted of a number of residential neighbourhoods or communities class IV and had a major civic or business centre which services these residential neighbourhoods which will accommodate 1000 - 1600 families or 5000-8000 people each, fig (3-4). Each of

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1 Source: 3.1, 3.2.1, 3.4.1.
Fig. (3.2): Boxiadis Master Plan for Greater Khartoum (1961-1981).

Source: Boxiadis Associates, 'Khartoum, A Long-Term Programme and Master Plan for the Town', 1960, pp
Fig. (3.3) : THE COMMUNITY STRUCTURE PROPOSED IN DOXIADIS MASTER PLAN (1961-1981).

Fig. (3.4) : LAY OUT OF A RESIDENTIAL NEIGHBOURHOOD PROPOSED IN
KOXIASIS MASTER PLAN (1961-1981)

Source : Koxiasis Associates, 'Khartoum, A Long-Term Programme
and Master Plan for the Town', 1960, pp 147.
these residential neighbourhoods was suggested to have a main market and shopping centre and a civic as well as a cultural recreational centre which was in certain cases combined with an intermediate or secondary school. It was also associated with a public park and small stadium. Hence, it was complete and composed of 2 to 4 communities class III.

The urban community class III was suggested to consist of 300 - 400 families and its connecting elements the primary school and a local shopping centre which was proposed to be located within an easy walking distance. In turn, the community class II was expected to contain 75 - 150 families. The connecting element here was the play ground or a Kindergarten for children under school age. The community class II, was consisted of 3 - 5 communities class I which were connected by pedestrian lanes. The community class I was the smallest urban community and made up of 20 - 25 families of the same income group and live very close to each other, their connecting element was the street or small square for infants or older people.

From the above, it is obvious that the community class IV (neighbourhood) is the smallest complete unit which contains all the basic functions needed by man. The Master Plan also suggests a certain provision of employment to only a limited number of the inhabitants.

The residential neighbourhood had a typical layout surrounded by arteries for vehicular traffic. These were supposed to be linked to a system of secondary roads inside the community which will reach every house and will end at a cul-de-sac. No vehicle through traffic was permitted to cross the neighbourhood and all functions were to be found along pedestrian avenues, thus permitting inhabitants to visit them on foot.1

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1 Jones, B., A Long-Term Programmed and Master Plan for the Town, University of Pittsburgh, 1960, pp. 141.
3.2.4 Qatif Plan (1975 - 1990)

These Italian consultants, Metit, were invited in 1974 to develop a Master Plan for Greater Khartoum for the period 1975 - 1990. By that time the town grew, and thus, the Qatif Plan did not go deep into the detailed planning in the residential neighbourhoods. However, it discussed certain remarks about the residential areas and suggested the Cul-de-sacs for the network grouping and the inner block spacing for the communities, rather than the grid-iron system, and stressed on the internal environment of the residential areas[8], fig. (3-b).

3.2.5 Doxiadis Ana. Khartoum Structure Plan (1990 - 2000)

This plan was proposed by Doxiadis Associates and Abdulnour Mustafa and partners in 1990. A primary goal for Khartoum is to establish a well structured organization pattern for residential areas, on the basis of related, but at the same time self-sufficient and relatively independent residential districts. The Plan suggests certain planning standards to be adopted catering for services and facilities at the various levels of the structure. These include:

a. The provision of neighbourhood centres.

b. Public facilities for education, health and open air recreation to be developed in all levels of residential communities.

c. Welfare, religious or other public bodies should be encouraged to undertake development of the remaining types of public facilities.

In the Plan Khartoum is expected to have 18 districts or sub-municipalities (250,000 - 300,000 inhabitants each, in the year 2000, and an approximate neighbourhood of 2000 inhabitants), which presents the proposed structure of communities. Existing residential areas were included in the proposed scheme. The Structure Plan for Khartoum caters for providing an opportunity to set new housing

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Fig. (3.5): Master Development Proposal for Greater Khartoum (1975 - 1990).

standards for proposed residential areas (increased densities) better equipped with municipal services (Fig. 3.6). The gross residential densities with the proposed neighbourhoods were calculated at 168, 120 and 93 persons per hectare for low, middle and high-income groups respectively.11

2.3 CONCLUSIONS:

Planning attempts for residential areas can be concluded as follows:

1. Before 1960, in the first Master Plan, residential areas were classified into three classes which were based on income levels. First and Second Class areas were laid in curved roads. Plot sizes were more than 1000 square metres for the First Class area with permanent building materials. For the Second Class residential areas, plot sizes were more than 300 square metres, and built in gilber. Third Class Areas were laid in grid-iron system, plot sizes were less than 300 square metres and built in temporary materials.

2. The second Master Plan for Khartoum (1961), a clear community structure was proposed for residential areas, consisting of 7 levels. The first level (top level) was Khartoum City. The second was each one of the three towns. The third was the district and the fourth was the residential neighbourhood which was the smallest complete unit containing all the basic functions. The cul-de-sac system was applied to the layout. The lower three ones were smaller communities.

3. The 1976 report recommended better environment within the residential areas and the cul-de-sac system was also suggested for the layout while no detailed planning for the neighbourhood was decided.

4. Khartoum Structure Plan (1990–2000) also proposed a clear organizational structure for the residential

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Fig. [3.6]: RESIDENTIAL DISTRICTS PROPOSED IN KHARTOUM STRUCTURE PLAN (1990-2000).

Source: Rasainin AMM, 'Khartoum Structure Plan (1990-2000)', Vol. 3, Figure Fw/n-8.
areas. It includes 18 districts distributed over the
three towns.

This system caters for better services, more
residential density and opportunities for better
housing standards.

v. Most of the existing neighbourhoods were planned in
the nineteen sixties, the inadequacies of which have
become evident after the development of
settled communities. This study attempts to highlight
the weaknesses of these plans with regard to Al姗姗�
neighbourhoods (a third class residential area).
Further justification for the selection of a third
class residential area is presented later.
4.0. INTRODUCTION:

This chapter presents a background about the social and economic characteristics of population of Greater Khartoum and of Alshaba neighbourhoods. It starts with the population size and growth, their distribution by age and sex, family size, education and their spatial distribution. The chapter also covers their tribal composition and employment and income. An outcome follows this analysis.

4.1. POPULATION OF GREATER KHARTOUM:

4.1.1. Population Size and Growth:

The population size in Greater Khartoum is accounted for through both the natural increase and internal migration. The population of the three towns, i.e. Khartoum, Khartoum North and Omdurman, grew from about 50 thousands in 1960 to 3.3 million inhabitants in 1990. Table (4.1) and fig. (4.1) show the evolution of the population in Greater Khartoum since 1950.

4.1.2. Age and Sex Distribution:

Table (4.2) and fig. (4.2) present the results of the 1990 enumeration by age and sex. There is an imbalance between sexes, and a large population of the school-going age (one in five is in the 7 - 14 age bracket), also a surprising ratio in the first age group. By the sex pyramid, a high proportion of children is clearly indicated. A high proportion of children has significant implications on employment, education and the provision of other social facilities. It also suggests a high level of fertility and mortality while a low proportion of aged persons indicates a short expectancy of life.\[1\]

\[1\] Jaafar M., 1988, op. cit., p 53
**Fig (4.1) THE EVOLUTION OF THE POPULATION OF GREATER KHARTOUM SINCE 1956**

**Source:** Doxiadis AHM, "Khartoum Structure Plan (1950–2000)", Vol. 3, Figure H.3

**Table (4.1) THE EVOLUTION OF THE POPULATION OF GREATER KHARTOUM SINCE 1956**

<table>
<thead>
<tr>
<th>Year</th>
<th>Population</th>
<th>Year</th>
<th>Population</th>
<th>Year</th>
<th>Population</th>
</tr>
</thead>
<tbody>
<tr>
<td>1957</td>
<td>262,646</td>
<td>1975</td>
<td>874,435</td>
<td>1984</td>
<td>1,147,756</td>
</tr>
<tr>
<td>1959</td>
<td>301,153</td>
<td>1977</td>
<td>972,708</td>
<td>1986</td>
<td>1,328,809</td>
</tr>
<tr>
<td>1960</td>
<td>320,475</td>
<td>1978</td>
<td>1,026,859</td>
<td>1987</td>
<td>1,422,031</td>
</tr>
<tr>
<td>1961</td>
<td>345,306</td>
<td>1979</td>
<td>1,083,255</td>
<td>1988</td>
<td>1,521,162</td>
</tr>
<tr>
<td>1962</td>
<td>369,734</td>
<td>1980</td>
<td>1,143,169</td>
<td>1989</td>
<td>1,622,031</td>
</tr>
<tr>
<td>1963</td>
<td>395,932</td>
<td>1981</td>
<td>1,206,386</td>
<td>1990</td>
<td>1,725,000</td>
</tr>
<tr>
<td>1964</td>
<td>423,964</td>
<td>1982</td>
<td>1,273,099</td>
<td>1991</td>
<td>1,829,916</td>
</tr>
<tr>
<td>1965</td>
<td>453,981</td>
<td>1983</td>
<td>1,343,299</td>
<td>1992</td>
<td>1,935,000</td>
</tr>
<tr>
<td>1966</td>
<td>486,123</td>
<td>1984</td>
<td>1,428,809</td>
<td>1993</td>
<td>2,041,902</td>
</tr>
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<td>1967</td>
<td>520,540</td>
<td>1985</td>
<td>1,522,031</td>
<td>1994</td>
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<td>1968</td>
<td>557,394</td>
<td>1986</td>
<td>1,622,322</td>
<td>1995</td>
<td>2,259,809</td>
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<td>1971</td>
<td>684,365</td>
<td>1989</td>
<td>1,980,222</td>
<td>1998</td>
<td>2,603,000</td>
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<td>1972</td>
<td>732,818</td>
<td>1990</td>
<td>3,025,000</td>
<td>1999</td>
<td>2,721,916</td>
</tr>
</tbody>
</table>

**Source:** Doxiadis AHM, "Khartoum Structure Plan (1950–2000)", Vol. 3, Figure H.3
Fig. (4.2) : 1990 GREATER KHARTOUM POPULATION PYRAMID.

TABLE 4.1.2-1 : 1990 AGE & SEX DISTRIBUTION OF THE POPULATION OF GREATER KHARTOUM

<table>
<thead>
<tr>
<th>SEX</th>
<th>VASES</th>
<th>%</th>
<th>MALES</th>
<th>%</th>
<th>TOTAL</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>VASES</td>
<td>%</td>
<td>MALES</td>
<td>%</td>
<td>VASES</td>
<td>%</td>
</tr>
<tr>
<td></td>
<td>153,376</td>
<td>12.13%</td>
<td>1,138,830</td>
<td>97.87%</td>
<td>1,292,206</td>
<td>100.00%</td>
</tr>
</tbody>
</table>

4.1.3 House-Hold Size:

The information about average house-hold sizes allows for easy calculation of densities for the different parts of the city. In 1983 the significant differences in house-hold sizes between different neighbourhoods indicated that population pressure was already uneven. It corresponded to different income levels; whereby poorer people had to accept larger house-hold sizes. In Khartoum Structure Plan (1990 - 2000), house-hold sizes for the year 1990 were assumed to be 5.8, 7.3 and 8.3 for the First, Second and third Class residential areas respectively.

4.1.4. Educational Attainment:

From the 1983 Census, per the population of 1.1 million inhabitants aged 7 years or more, nearly a third was illiterate and another third could only read and write. Only one in ten had secondary education. From Table (4.3) it was clear that the population of the school-going age in 1983 were 11.2 % for the primary school (7 - 12), 5.3 % for the intermediate school (13 - 15) and 4.3 % for the secondary school (16 - 18).

4.1.5 Population Density and Spatial Distribution:

Population distribution and density have significant variations within the three towns, not only between one town and another, but also within each individual town. The contrast in densities is well marked in Khartoum as compared with the other two towns, because of its diverse economic and social structures. In this case densities range from less than 500 persons per km² in high class areas to about 27000 persons per km² in low class housing quarters. In both Khartoum and Khartoum North there is a tendency for the population densities to increase along the gradient from the Blue Nile outwards. On the other hand, Omdurman displays a more even distribution of population and has an average of a higher density than the other two towns. It is compactly built with minimum open spaces, resembling in many aspects African and Middle Eastern
<table>
<thead>
<tr>
<th>AGE</th>
<th>TOTAL [M]</th>
<th>GRAM</th>
<th>PREPART.</th>
<th>INTERMEDIATE</th>
<th>SECONDARY</th>
<th>TECHNICAL</th>
<th>TOTAL</th>
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<td>6</td>
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<td>250-279</td>
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<tr>
<td>8</td>
<td>22856</td>
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<td>0</td>
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</tr>
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<td>22502</td>
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<td>0</td>
<td>0</td>
<td>121</td>
<td>22644</td>
</tr>
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<td>24622</td>
<td>103</td>
<td>370-399</td>
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<td>0</td>
<td>103</td>
<td>24828</td>
</tr>
<tr>
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<td>23105</td>
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<td>21095</td>
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<td>21169</td>
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<td>20741</td>
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</table>

**SOURCE:** BUDGETARY KEY, BRAHMANI STRUCTURE PLAN

Generally, throughout the main built-up area, the lower the residential class the higher the density of population and the smaller the size of plot devoted to buildings and vice versa. Fig. 1.1.2 (44).

4.2. SOCIAL ANALYSIS :-

4.2.1. Composition of Population by Tribal Groups:

Sudanese population is composed of numerous tribal groups of diverse racial and geographic origins. Greater Khartoum as stated by Wafit Plan in 1975 was characterised by the prevalence of the Arab race which represented about 53.7%; second was the Nubian group, which represented about 18.9%. Other tribes like Nuba, Riaa and Westerners represented about 1.6%, 0.2% and 4.1% respectively.

4.2.2. Ethnic Composition of the Population:

The ethnic composition in an area reflects the importance of immigration. For Greater Khartoum the average composition can be 50.8% Arabs, 23.8% Nubians, 3.9% West Africans, 3.9% Ncovallad, 33.9% other Sudanese, 3.4% from Darfur, 2.9% Nuba, 2.5% Foreigners, 0.8% Copts, 0.7% Nilotic, 0.2% Sudanic speaking, 0.1% Nilotic, 3.7% with no data.

In the peripheries, the settlement pattern of various groups tends to create ethnic islands. This is most marked in the island of Tuti where the percentage of Nubians is 83.1% and El Gerief West is 82.9% Arabs.

4.2.3. Social Relationships and Main Social Features:

Generally in Greater Khartoum, the location of the different class areas, whether separated or mixed, can influence the intensity of interaction and social relationships between households. Previous studies proved that social interaction of households with residents in the same class area is stronger than the interactions with

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1. Wafit Consulting Engineers, op cit, p 11.
2. Wafit Consulting Engineers, ibid, op cit.
Fig. (4.3): GROSS DENSITIES OF GREATER KHARTOUM

Source: Doxiadis AMM, "Khartoum Structure Plan (1990-2000)", Vol. 3, Figure H.3
Fig. (4.4): CLASSIFICATION OF URBAN LANDS IN GREATER KHARTOUM [1990]

Source: Dominik AMM, 'Khartoum Structure Plan (1980-2000)', Vol. 5, Figure 4.2
residents in other class areas. Also the social interaction of the house-holds with others in the same class area is generally stronger in Fourth and Third Classes than First and Second Classes.\[1]\]

The extended family system is one of the social features of the Sudanese society. It is associated with the desire of the newly married couples to live with their parents or close to them. Moreover most of the parents depend on their sons when they get old. Other social features include women taking part in the community activities; children playing in the street and residents shopping at walkable distances from their homes.\[2\]

Privacy as an Islamic tradition applied for Sudanese houses and the custom of sleeping outside rooms, usually in the court yards or under covered verandas, are also of the main social features.\[3\]

4.3. ECONOMIC ANALYSIS:

4.3.1. Employment:

Employment is usually the single most important consideration in people’s choice of place of residence. According to 1983 Census, out of the total population of Khartoum of 1,343,000 those aged 10 years and above were 937,000 inhabitants. Out of these, 419,000 were employed (including 29,000 seeking work for the first time).\[4\]

4.3.2. House-Hold Income:

The latest official survey of House-Hold Incomes and Expenditures of Khartoum Province was carried out in 1978. In Khartoum Structure Plan 1990 - 2006, it was assumed that the population is divided in 1960 into social classes in the following way:

---

2. Idris Associates, op. cit., p. 46.
1st class 5% 165,000 high income
2nd class 10% 320,000 middle income
3rd class 85% 2,805,000 low income
Total Population 100% 3,390,000

4.4. SOCIO-ECONOMIC CHARACTERISTICS OF ALSAHAF

4.4.1. Population Size and Growth:
Population in Alsahefa increased from about 37,385 in 1983 to about 70,770 in 1990, as provided by the Central Statistical Department. In the Structure Plan for Khartoum 1980-2000, the projected population for the three towns for the year 1992 indicated that the population increased by 18.5% from the year 1990-1992. Applying this rate to the neighbourhoods under study, the population for the year 1992 can be estimated as 77,847 inhabitants. This growth might be due to natural increase and/or to immigration. Table 4.4 presents the distribution of the population by sex in 1990.

4.4.2. House-Hold Size:
From the 1983 Census results, Alsahefa was divided into about 6,576 house-holds each with an average size of 5.8. According to 1990 enumeration\(^1\), the average house-hold size was assumed to be 6.9 and the total number of house-holds was 10,292, distributed as presented in Table 4.4.

4.4.3 Employment
From the policy of land distribution applied in Alsahefa neighbourhoods, occupations of head of households are expected to fall in the group of manual labours and low-income government employees.

4.5. CONCLUSION:
From the above analysis the following was concluded:
1. Population of Greater Khartoum increases with high


42
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<th>TOTAL NO OF:</th>
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<td>37748 :</td>
<td>72372 :</td>
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</table>

rates especially in low-income class neighbourhoods where larger household sizes exist.

ii. There is a high presence of tribal grouping and a large ethnic composition having different languages and accents which group in separate neighbourhoods especially in Omdurman. This necessitates the proper social survey over the people who are going to reside in the neighbourhood under planning.

iii. The Sudanese have strong social relations and interactions which have been affected by the classification of the social groups according to their income levels.

iv. The variation in the ratios of sexes and age groups suggests the need for a detailed study for their distribution, since they affect the provision of social and economic facilities considering their number, capacity and locations in the neighbourhood.

v. More than 80% of the population of Greater Khartoum are of the low income group. Therefore, this larger proportion should have the priority in the studies which deal with the residential neighbourhoods. Maximum priority was assigned to this income group and thus Alshaba'a neighbourhoods were selected for this study.
CHAPTER FIVE
 AL-SAHABA NEIGHBOURHOODS PLAN
 EVALUATION (A); OFFICIAL PROPOSALS

5.1 INTRODUCTION

In this chapter, the analysis and evaluation of Al-sahaba neighbourhoods’ plan will be compared with the ideal neighbourhood planning, discussed earlier.

Analysis and evaluation will cover the overall layout of the four neighbourhoods including road network, the provision and the spatial distribution of the plots, open spaces, infrastructural services and the social and economic facilities. At the end, an outcome of this chapter will be presented.

5.1 GENERAL ZONING AND LAYOUT OF THE NEIGHBOURHOODS:

Al-sahaba residential area is composed of four neighbourhoods which have almost typical planning layout. Each two of these neighbourhoods are oriented similarly, either north-south (Al-sahaba Sharg and Al-sahaba Wasiati), or east-west (Al-sahaba Ghariq and Al-sahaba Teheri). The whole area is connected to Khartoum Centre and other parts with four main roads going north-south, those are Sedani road, Mohamed Naseeb road, Al-sahaba road and Gereeb road, fig. (5.1).

The whole area of Al-sahaba includes about 6000 residential plots distributed in a total area of about 3250000 square meters. Each neighbourhood contained about 1500 residential plots and separated by the main roads (60 meters wide). For this study, one of each type of the neighbourhoods will be analysed and will be referred to as type (A) and type (B) as shown in fig. (5.1).

In the plan each neighbourhood consist of six residential blocks and a seventh block for the service centre. A gridiron system is used to the whole layout of the road network in the neighbourhoods. Each neighbourhood had four main roads (50 meters wide) leading from outside the neighbourhood to the service centre. Two of them are
Fig. (5.1) : GENERAL ZONING AND LAYOUT OF ALSAHAFA NEIGHBOURHOODS (Scale 1 : 2500).

Source : General Map of Greater Khartoum 1981, Sudan Survey Department.
going north-south while the others are going east-west. The system continues to the inner roads within the residential blocks where road width is 10 metres.

This system of road layout creates many avenues for the vehicles to the main roads outside the neighbourhoods and the service centres, it encourages traffic to invade the residential area for short cuts to near roads and open spaces, fig. (5.1). Also the provision of the main roads separating the neighbourhoods may bring large traffic volumes north-south of the area creating environmental disturbances for residents where no buffer zones are provided in the plan.

In such low-income neighbourhoods, a low percentage of households who own private vehicles is expected. Thus, residents largely depend on public transportation for their normal movement within or around the neighbourhoods. However, the transport routes are not within comfortable walking distance for all age groups in the population. For instance the 1-neighbourhood type (A), (1400m x 820m, and laid east-west), people in the middle blocks will walk for 700m to the public transport.

For the neighbourhood type (B), (1640m x 926m, and oriented north-south), people can reach transport routes after a maximum walking distance of about 450m, fig. (5.2) & (5.3).

1.3 PLOT SIZES AND LAYOUT

In the official plan, plot sizes are suggested to range between 300-425 sq.m, as a Third Class residential area. Each block contains about 15-20 clusters (10m x 90m) which consist of 12 plots each, 6 plots on each side with a back to back layout and about 15m frontage. The system of the plots layout has been regularly continued to cover the whole block, some clusters have been laid north-south while the others laid east-west, fig. (5.4). Those oriented north south create some difficulties in the layout of the internal

Fig. (5.2) : LAY OUT OF NEIGHBOURHOOD TYPE (A)


1. PEA M CHINK
2. PRIMARY SCHOOL
3. INTERMEDIATE SCHOOL
4. BRIDGE
5. C.I.D
6. SAFETY AND SECURITY
7. OPEN SPACE
8. RESIDENIAL AREA
Fig. (5.3) : LAY OUT OF NEIGHBOURHOOD TYPE (B)

Source : Ministry of Housing and Public Utilities, Department of Housing, 1992.
A SAMPLE LAYOUT OF A RESIDENTIAL BLOCK

(only about 10.6% - 12.6% of the families will have direct access to the open spaces.)
spaces within the plot since building regulations imply the need for a free area to be left at least 2.5m wide along the north and the south sides of the plot, unless they are adjacent to roads or open spaces, fig. (5.5).

5.4 OPEN SPACES:

The official plan provided three sizes of open spaces. Those had areas of 40m x 90m (equal to the area of a cluster of plots), and 80m x 90m (double the area of the cluster) were provided within the residential blocks for communal activities and environmental purposes. Each block contained either one or two open spaces. An equal area was reserved in only 30% of the neighbourhood blocks for future neighbourhood expansion. An other larger size open space was provided in each neighbourhood service centre.

According to the socioeconomic characteristics of the residents of such a neighbourhood, discussed earlier, social activities are expected to occur in these open spaces. However, the number, location and accessibility of these open spaces do not satisfy the requirements for the families of a block. That is to say in Alshaha neighbourhoods plan, each open space is surrounded by only 16 plots.

Therefore, only about 32 families out of the 250-300 families in a block can directly have access to the open spaces i.e. only 10.6%-12.8% of the families, fig. (5.4).

5.5 INFRASTRUCTURAL SERVICES:

Infrastructural services usually provided for Third Class residential areas were set in the plan under study. They included:

i. House-connected piped water.
ii. Electricity and street lighting.
iii. Main roads.
iv. Surface drainage; this was not well designed to the efficiency required for the seasonal rain water.
v. Rubbish collection at communal points.
vi. Telecommunication connected to a small number of
FIG. (5.8) : A SAMPLE LAYOUT OF A CLUSTER OF PLOTS ( ORIENTED NORTH SOUTH )
At this stage, evaluation will not cover those infrastructural services quantitatively, but observations will be made as to their respective provisions in residences.

5.6 SOCIAL FACILITIES:

5.6.1 Health Facilities:

The provision of health facilities depends mainly on the size of the supporting population. Other external factors, such as overall capacity of the public health agencies to render health services to neighbourhoods, may be introduced.

For a population of about 1000-4000, a dispensary may be sufficient, while for a population of about 10,000-15,000 a fully fledged health centre (incorporating a general practitioner, a dentist, a laboratory, a dispensary, a family planning unit, etc., as required). For a population of over 20,000, a hospital should be provided with specialized departments, antiseptic operations theatre and inpatient departments.

Therefore, in each of the neighbourhoods under discussion, each two residential blocks are expected to accommodate a dispensary, while a health centre is expected to be provided for each neighbourhood. Moreover, at least one hospital is supposed to be provided for the population expected to reside in the whole area of the neighbourhoods. The plan, however, suggested that each neighbourhood should only be supported by one health centre located in the service centre, while no dispensaries or hospitals were planned, fig. (5.2) and fig. (5.3). The absence of these dispensaries forces the residents to go to out of the residential blocks for any simple medical treatment.

1 Nasser, Ab. A., op. cit.

5.6.2. Educational Facilities:

A. Kindergarten:

Kindergartens usually accommodate children of the first and second age groups (6-7 years old), and should be located within short walking distances (≤ 250m). From the previous socio-economic analysis, a high percentage of population in this age group is expected to live in informal neighbourhoods in Third Class residential areas. Since no provision for this facility was proposed in the official plan.

B. Primary Schools:

For residential areas, primary schools are used for more than their normal educational activities. They are also used as centres for cultural and social activities.

The provision of primary schools in a certain residential area depends on the population density in that area. For "ideal" planning in Greater Khartoum, the Department of Educational Planning in the Ministry of Education adopts certain standards that include:

- a. The maximum capacity of a class room should be limited to 50 pupils.
- b. The capacity of the school should be limited to 800 students (i.e., two streams of six class rooms each).
- c. The longest walking distance to school should not exceed 500m, i.e., 10 minutes walking distance.

According to these standards and to the expected population of this age group (7-12 years old) in 1990, the expected numbers of primary school streams was supposed to be 3 for each neighbourhood, while the official plan proposed 8 streams distributed over four residential blocks as two one stream schools for each block; one for each sex, Fig. (5.2) & (5.3). That means the capacity of the proposed schools was about 600% of the required capacity in 1990. Table (5.1).

1 Ministry of Education, Department of Educational Planning, 1992
2 1.5% of the population in Greater Khartoum are children within this age range (see Table 4.11). It was assumed that 20% of them go to school.
C. Intermediate Schools:

The provision of the intermediate schools differs from that of primary schools. They accommodate the next age group who can walk for larger distances.

For the "ideal" planning in Greater Khartoum, the Department of Educational Planning in the Ministry of Education decided in the following standards for the intermediate schools:

a. The max capacity of a class room should be limited to 40 pupils.

b. The capacity of the schools should be limited to 120 pupils (i.e. three streams with six class rooms each).

According to this standards and to the expected population of this age group (13 - 15 years old) in 1990, the expected number of intermediate school streams was supposed to be 8 streams for each neighbourhood. The official plan proposed 8 streams distributed over two residential blocks two streams school for each sex, fig. (5.2) & (5.3). That means the capacity of the proposed schools was about 133% of the required capacity in 1990. Table (5.1).

D. Secondary Schools:

The secondary school facility is not limited to the level of ten
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</table>
neighbourhood. One school can serve a larger catchment area. They are usually considered at a city level rather than residential neighbourhood level. The number of students per class should not exceed 40 and more than 3 streams per school can be planned.

However, according to the standards and the expected population[1] in this age group in 1990, the expected number of streams was supposed to be 7 for each neighbourhood. The official plan proposed 4 streams for each of the neighbourhoods type (B), i.e. Almahafa Shams and Almahafa Nasat; distributed over two four streams schools, one for each sex, while no provision for secondary schools existed in the neighbourhoods type (A), i.e. Almahafa Nasat neighbourhoods. That means the capacity of the proposed schools was 30.7 % of the required capacity for the four neighbourhoods, since most of the students are expected to be of Almahafa neighbourhoods as the nearest adjacent residential area. Table (5.1). Both schools were located in the peripheries of the neighbourhoods rather than the centres. Probably, this may be better for the students who are expected to come from other neighbourhoods. Fig. (5.2) & (5.3).

5.6.3 Religious Facilities:
Religious facilities are usually mosques and synagogues (they are usually established by certain religious groups within the residential blocks). The plan showed locations for four mosques for the whole neighbourhood, one in each community service centre Fig. (5.2) & (5.3).

5.6.4. Recreational Facilities:
Generally, recreational facilities have a great role in social interactions. For such residential neighbourhoods, recreational facilities are expected to include public parks, cinemas, clubs, cultural centres or community centres.

[1] 4.3% of the population in Greater Sharjah are within this age group (see Table 4.3). It was assumed that 80% of them go to school.
centres. Locally, these clubs or community centres have different forms of functions i.e. they are used as kindergartens during the day; for adult education during the afternoons; as well as for cultural and recreational activities (exhibitions, public lectures, slide and video shows, film show, playing games, etc). For large neighbourhoods more than one centre should be provided.

The plan suggested two plots in each neighbourhood service centre. One for a club and the other for a cinema. However, about 1500 families will share only one club located in the central block while no separate community centre was provided in each residential block (250 - 300 families) fig. (5.2) & (5.3). Also no provision for a higher level recreational facility for the four neighbourhoods was allowed for.

5.6.5. Shopping Facilities:

There are two categories of shopping facilities within a residential area; shops for daily needs; and markets for weekly/monthly needs. Shops are usually privately established as family enterprises. Their number, sizes and locations are totally dependent on the local movements of supply and demand. The neighbourhood shopping and service centres should provide less frequently needed goods and services (e.g. flour mills, barbers, tailors, etc) and periodically needed goods and services (e.g. clothes, shoes, electrical equipments, etc). Meat and vegetables are usually provided in these shopping centres. The provision of these centres depends on the size and purchasing power of the supporting population and the proximity to other shopping facilities.

The official plan of Al-Shafai proposed a location for shopping facilities for each neighbourhood. These shopping facilities were to be distributed in two groups in each service centre. Functions of the shops were not well defined in the plan. No provision for a local shopping

facility was decided for each residential block, and no higher level shopping facility for the whole residential neighbourhood was planned, Fig. 15.21 (3.3).

5.7.6. Economic Facilities:

Generally, economic facilities incorporate employment and work opportunities. People prefer to live with close proximity to their work places unless other external factors emerge.

In planning a residential neighbourhood, the provision of a certain level of work opportunities matching the residents occupations is one of the very important factors. For the neighbourhood under study, the previous analysis of the socio-economic characteristics of the population showed that employments should lie in the low-income class. However, according to the conditions attached to the distribution of the residential plots of Akasheia neighbourhood, occupations of household heads are expected to be submanual labourers, low-income government employees.

In the plan, opportunities are expected to be provided for teachers of different schools, medical service personnel (i.e., doctors, nurses, etc.), clerks, any administrative or commercial work. These jobs will be provided for only a small portion of the population.

5.8 CONCLUSION

According to the above evaluation of the proposed plan of Akasheia neighbourhood, the following conclusions can be made:

1. The main roads crossing the area may impede the social contact between the people residing in the different neighbourhoods because of the large traffic volumes expected to pass north-south from Harrow centre, unless certain safety precautions are applied.

2. In terms of accessibility, movements of the residents within and around the neighbourhoods will be easier north-south. However, the orientation of these neighbourhoods results in long walking distances to the main traffic roads.
provision for bus terminals was made within the
neighbourhoods.

iii. The grid-iron system applied in the layout of the
neighbourhood, will encourage the vehicular traffic to
pass through every internal road. Thus, car nuisance
will affect the residents especially those
practising communal activities outside in the roads or
open spaces.

iv. Open spaces were not equally provided for all the
residents of the blocks.

v. For health facilities, dispensaries were not
considered in the plan while health centres rationally
provided.

vi. For educational facilities, the official plan did
not consider the kindergartens. According to the
population of 1990, primary schools, intermediate and
secondary schools can be evaluated as follows:
(a) Proposed primary schools easily accommodate the
existing population and a 60% future increase,
but locations were not well studied.
(b) Intermediate schools easily accommodate the existing
population and a 30% future increase but
locations were dispersed in the edges of
the catchment area rather than in the
centre.
(c) Secondary schools were not provided for all the
neighbourhoods, i.e. about 30% of the students
will need to go to other schools outside their own
neighbourhoods.

vii. Recreational facilities were not considered at the
local level for each block and no children and family
parks were considered in the plan.

viii. Proposed shopping facilities were reasonable
for the level of the neighbourhood centre but no
local shopping facilities were provided for each block
in the plan.
6.0. INTRODUCTION

Planning decisions generally have great influence on the beneficiaries of the plan and vice versa. However, the residents of a neighbourhood, within a certain socio-economic situation are the ones who must feel the merits and the deficiencies of their neighbourhood plan. In the previous chapter the official plan of Alsahefa neighbourhood was analysed and evaluated and it was concluded with certain remarks based on the "ideal" plan required for such neighbourhoods.

To reinforce the evaluation of the plan, it was decided to study the effect of the plan proposals on the residents of the neighbourhoods (means) considering layout, open spaces, plot sizes, infrastructural services and social and economic facilities and how the residents use these facilities. To gain this information, a survey on the existing situation was decided. A questionnaire was designed to cover a sample of the population and to get information related to their socio-economic situations and the level of their interaction with the existing facilities and their levels of accessibility. Based on this questionnaire it was decided to interview residents in different age groups about their opinions about the residential environment and the requirements expected to be satisfied in such a plan.

In the previous analysis of the plan of Alsahefa neighbourhoods, conclusions showed that more problems are expected to appear in the neighbourhoods type IAI i.e. Alsahefa Gharb rather than those of type IBI i.e. Alsahefa Sharq and Alsahefa Nazat. Thus, the survey and the analysis of the existing situation were applied to this neighbourhood type, specifically the southern one.
residents within this neighbourhood may face more difficulties in the movement to the outside because it is a little farther from other parts in the city especially Khartoum Centre. Since most available data was that of 1980, it was decided to base the study on this year.

In this chapter the existing neighbourhood and the residential environment will be evaluated considering residents' interaction with the plan proposals and what difficulties they met as a result.

The survey results including the questionnaire (the sample covered 150 houses i.e. 10% of the houses existing in the plan) the interviews and observations are all going to be explained during evaluation process.

6.1. SOCIAL INTERACTION:

During visits to Alshaha area for data collection for the questionnaire it was generally observed that there was a strong social interaction between the households who gained the plots in the housing scheme (1971) and represent about 67% of the total households. This social interaction seemed to be stronger than between other inhabitants. This may be due to the reason that most of these people were former inhabitants of Khartoum South, and were either relatives or long-term neighbours. Moreover, they were of the same income group. Fifteen percent of the residents who bought their plots or houses were those who bought their plots or houses. They seemed to have less interaction with other households or social and economic facilities in the neighbourhood. This was particularly true among those of the higher income groups.

Social interaction among the residents, who were either tenants (11%) or inheritors (1%) was also stronger in the low income group.

6.2. THE GENERAL PHYSICAL PATTERN

After studying the existing neighbourhood of Alshaha, comparing the physical environment with what was prepared in the plan, it was noticed that almost all residences were
built while the social and economic facilities were partially executed, photo (6.1). Generally, the physical pattern of the neighbourhood followed the same zoning and layout of the official plan. The six blocks were implemented, except for the service centres (only some parts were built). The Municipality failed to implement these facilities due to mismanagement of administration and monitoring of the projects, lack of financial resources and other organizational problems. As a result, the residents, on self-help basis, built some of those establishments.

5.1. LEVEL OF ACCESSIBILITY TO THE MAIN TRANSPORT ROUTES:

The neighbourhood under study is served by the two main roads going north-south (i.e. Almahafa Sharr and Gebra road). Both of these roads are paved and have public transport routes. There are four unpaved secondary roads passing through the neighbourhood leading to the service centres, two of them are oriented north-south and the other two are oriented east-west (as provided in the official plan).

According to the questionnaire results, 35% of the present households own private cars, while the rest, 65%, depend on public transportation in their movement within and around the neighbourhood.

For this neighbourhood, the nearest transport routes are Almahafa Sharr on the east and Gebra route on the west. The whole neighbourhood is separated from Gebra road by Almahaf Gebra residential area. Therefore, the walking distance to Gebra transport is 120m for the nearest households. However, a portion of the residents feel it convenient to use Gebra transport (i.e. about 20%), while about 30% of them think it is easier to use Almahaf Sharr route. The rest of the households (i.e. 40%) usually find it hard to use any of them.

The residents, on self-help basis, suggested paving the east-west road separating the two neighbourhoods of Almahaf Gebra and to develop a transport route on it. Applying this idea, only about 25% additional residents can
benefit. Thus, other 25% will still suffer from difficult accessibility inside and outside the neighbourhood, fig. (6.1).

6.4. HOUSES:

The neighbourhood was originally planned to accommodate residents of the low-income group. This criterion was then applied to the planning of the neighbourhood, i.e. to the layout, plot sizes (300-400 sqm), level of allowable building materials (mud and mud bricks in single floor buildings). The First and Second Class residential neighbourhoods (discussed in chapter 3) were given larger plots and higher building standards (red bricks, stones and concrete multi-storey buildings for the First Class and ginished single storey buildings for the Second Class houses).

In Alshaha'f, the various building standards exist. Survey results presented that only about 55% of the existing houses were built in Third Class building standards. The rest 45% of the residences were built in First and Second Class standards (18% are not the original residents).

From observations, it was noticed that the percentage of the houses of the First Class building standards, especially those having shopping facilities in their ground floors, was higher in the blocks which faced the main roads. This might be due to the accessibility factor. Hence land value increased and a large number of households either sold or rented their houses and went to live elsewhere, fig. (6.2).

The original households of Alshaha'f - of the low-income group - could not easily accept the introduction of those higher class income groups because the latter usually are not interested in interacting with them nor are they engaged in the social facilities of the neighbourhood. Another reason was that their multi-storey houses usually block the wind from the nearest ground floor houses and expose their open courts and verandas. This problem is more serious during summer season when people need to open the windows and to sit and sleep.
Fig. (6.8) : EXISTING BUILDING STANDARDS IN ALAMAPA NEIGHBORHOOD
6.3. OPEN SPACES

For the residents of Alumnah's neighbourhood, open spaces (including roads) are important to their daily life routines. For children and youth interaction and for any other communal meetings. From survey results, it was clear that about 95% of the families' children played on the near roads. These were of less than 10 years age groups. The next three age groups of males only, i.e., (10-11), (15-19) and (20-21), played their football games in their nearest open spaces. These games were usually interrupted by through traffic which passed within these roads and open spaces, especially the youngest ones. This made parents worry about their children because of many accidents that happened within these areas as a result of fast traffic movement. Photo. (6.3). Females of these older age groups were satisfied with visiting in their homes. Adult males above 25 years old gather together in front of their houses or in front of corner shops. Photo. (6.4).

Ceremonial gatherings were always practiced in the near roads. This is for those who have no direct access to their nearest open spaces. They think it is sometimes uncomfortable for them to practice these activities in the near roads, since these activities need larger spaces to accommodate the hundreds of visitors (especially for wedding parties). On the other hand, this activity usually blocks the roads which makes the pedestrians and vehicular movement usually divert elsewhere.

Generally, plantation is not well considered in the neighbourhood either in or out of their houses. In only about 10% of the residents have greenery in and/or outside their houses. More than 95% of the open spaces are not planted. Photo. (6.1). From interviews with different age groups' members, it was noticed that they don't encourage planting because;
Photo (5. 2) : FIRST CLASS BUILDING STANDARDS IN AL-SABAA
NEIGHBOURHOOD. (Houses)
Photo (6.3): PENETRATION OF LARGE VEHICLES INTO THE BIKBI ROAD.

Photo (6.4): YOUTH GATHERING IN FRONT OF HOUSES AND NEAR (OPEN) SPACES.
They have not got enough spaces for the plants since they have to leave a reasonable space for the vehicles to pass. Most probably this was caused by the grid-iron system which collected uncontrolled vehicular traffic into the neighborhood.

Water pressure is very low which discourages them to water the plants.

The availability of a large number of goats going around in the neighborhood (some residents let their goats have around to find fodder).

Another observation is that about 10% of the houses had outside extensions built of temporary building materials like steel, timber, bamboo and/or tree hedges. They extended along the plots' frontages leaving access for home entrances, with about 3 m width. These enclosures were usually used for outside sitting, car parking, animal sheds, or, in rare cases, for outdoor sleeping. Photo. (6.4).

This phenomenon was developed by those who were not satisfied with their plot sizes. It was largely done by the residents who were directly facing the wide roads (20 m) and the open spaces. In the case of the narrower roads i.e. 10m wide, this phenomenon disturbed the environment on the road since it reduced the area provided for public use. There was a number of open spaces which were partially built as canteens, and/or kindergartens. This also led to reduction of the area which was provided for outdoor activities for those who were directly facing the built areas, Fig. (6.5).

6.6. INFRASTRUCTURAL SERVICES

Generally, during the last fifteen years or so, a clear improvement in the efficiency of the utility infrastructures have been noticed, especially electricity, water supply, drainage and sewage and rubbish disposal. It is quite obvious that the failure of these utilities was caused by the lack of national planning and proper administration. As far as electricity is concerned, the huge expansion of the
Photo (6.6) : HOUSE EXTENSIONS OUTSIDE IN THE ROAD.

(notice functions of these extensions)
Fig. 16.3: EXISTING SOCIAL FACILITIES IN ALSANAPA NEIGHBOURHOOD

1. FAMILY HOME
2. INTERMEDIATE SCHOOL
3. MARKET
4. CLINIC
5. OPEN SPACE
6. ZANJA
7. HOUSE
8. OPEN SPACE
city since the 1960s was not met by planning for replacement of plants, or provision of new plants. Thus, the steadily increasing consumption imposed high pressures on the existing network. Greater Khartoum is suffering from a severe shortage in the electric power supply.

Alshaafa neighbourhood being one of the low-income class areas, located in the outskirts of Khartoum, suffers from the problems of low water pressure and inadequate supply of electricity. Those residents of the middle and high-income households might be able to overcome these problems by using domestic water supply pumps and electricity generators. Rain water drains are almost unavailable (Photo 6-8). Water is collected from down by special vehicles which are not satisfactory because of the usual delays by the collectors. The environment is polluted and diseases are usually spread to residents especially by rainwater (i.e., malaria, etc.). Fatberines and septic tanks systems seem to be satisfactorily applied. Telephones are insufficient. 10% of the houses are connected to the telephone network.

5.7 SOCIAL FACILITIES:

5.7.1 Health Facilities:

With reference to the official plan, only two out of four health centres have been implemented in Alshaafa residential area. These are Alshaafa North health centre in the northern neighbourhood near Al and Aswan Malik Hospital in Elshaafa Sharq. Two dispensaries have been established in Alshaafa Sharb. In the neighbourhood under study no health facilities were found. Thus, residents within this neighbourhood usually used to go outside the neighbourhood for medical services (Fig 4A 1).

From survey results, it was noticed that 65% of the residents use Aswan Malik health centre while the rest go to other health care buildings either inside or outside Alshaafa neighbourhood, in Khartoum city.

1. Asnafally, A.A.H., report, 1988,
Photo (6.6) : (rain water drains are almost in available)
Fig. (6.4): Use of Existing Health Centre in Alakara Neighbourhood.
or other areas. This problem has an impact on both the residents and the health facilities:

Firstly: the distance to the hospital for the farthest user is estimated as 2.8 km. Nevertheless, no east-west transport route has still been developed and about 40% of the households do not own private cars (users are of all age groups and most probably they will be in bad health conditions).

Secondly: The overflow of users and overuse of those health centres disturbs the sick people and deteriorates the centre's facilities.

2.7.2 Educational Facilities:

Educational facilities existing in the neighbourhood include nursery schools, primary and intermediate schools. Generally, these schools are not up to the standards in terms of capacity and building conditions. They have other problems of shortage of furniture and equipment. Fig. (6-1) shows the spatial distribution of these establishments throughout the existing neighbourhood, while the number and capacity of each kind will be evaluated separately in the following:

I. Kindergartens:

Throughout the whole neighbourhood, it was noticed that there is a considerable problem in Kindergartens. Children from the first and second age groups are satisfied with the existing number of these schools and their walking distances. The residents of each block, on self-help basis, established the kindergartens either in clubs, zawiya, mosques or in special separate buildings in their open spaces.

II. Primary Schools:

Existing primary schools in the neighbourhood are counted as 4 schools and distributed as 2 one-stress schools for each sex. Number of students per class ranges from 50 to 65.
From Table [5.1] and Fig. [5.5] the existing number of primary schools served about 90% of the population of this age group in 1990, with crowded classrooms.

From questionnaire results, about 82% of the students have no problem in reaching their schools on foot. The other 18% find it rather far to walk to their schools, where they have no primary schools in their own blocks and need to walk to adjacent blocks. The remaining 1% study outside the neighbourhood and go in private cars. This means there were some students from outside the neighbourhood, most probably to private schools, Fig [6.6].

III. Intermediate Schools:

There are 2 intermediate schools in the area, one male stream, school for each sex. Number of students per class ranges from 40-71. From Table [5.1] and Fig. [5.5], it was clear that the existing schools served about 98.5% of the population in 1990 with crowded situations. That means students from outside the neighbourhood were there in these schools.

From questionnaire results, about 72% of the students of the intermediate schools can easily reach their schools either by walking or in private cars. 12% find it rather difficult to walk to their schools. The remaining 16% find it difficult to reach their schools either on foot or in public transport, including students who study outside the neighbourhood, Fig [5.6].

IV. Secondary Schools:

For secondary school education, no provision exists in the neighbourhood. Students of this age group need to go to schools outside the neighbourhood. Both schools planned for the neighbourhood type B (B) were established, one for boys and the other for girls were established to serve these neighbourhoods. The number of students per class ranges from 50-73. From questionnaire results, it was clear that only 24.5% of the population in this age are served by
Fig (6.5): Capacity of the proposed and existing schools (by number of streams).
these schools. The remaining students were studying outside these neighbourhoods.

It was also calculated that about 24% of the students can reach their schools either by walking or in private cars. 21% find it rather difficult to reach their schools (they walk longer distances either to schools or to the traffic routes to catch transport). Getting to schools is difficult for the remaining 55% of the secondary school students due to the far distances from both schools and public transport routes, including those who study out side Alshahla neighbourhoods, Fig(6.1).

6.7.3 Religious Facilities:

Existing religious facilities in the neighborhood include two mosques and two zawias. The mosques are located one in the service centre and the other in out the centre while zawias are located within the block's central open spaces. They were established on self-help basis and used by certain religious groups in the neighbourhood, Fig. (6.3).

From survey results, farthest users of these facilities (those in the peripheries of the neighborhood) think it is inconvenient for them to reach these mosques many times per day. Others who are adjacent to zawias pray there especially the afternoon prayers (adult males, above 40 years old). It was generally noticed that the intention of going to the mosques in proportion to their precision within easy accessible distances, people usually like to do to these places when they are easily reached. Females pray in their homes except during Ramadan month when people prefer to pray in zawias and mosques. They suffer from long distances to walk, crowded conditions in the mosques and the unsafe movement as a result of the dark grades and open spaces that they cross (they pray Almassar) prayer at evenings). Some people who can go to private ones prefer to pray in certain mosques on gardens outside the neighbourhood, while others are satisfied with only one time per week and they go for the Friday prayers (Sala Aljama).Fig 6.2.
Photo (6.7): SERVICE CENTRE STILL AN OPEN AREA

(most of the social facilities are not yet executed, 1992)
6.7.4 Recreational Facilities

Clubs are the only recreational and cultural facilities existing in the neighbourhood. They are counted as only two clubs located in two of the blocks i.e. in the open space of those blocks. Each club is limited to the use of youth males of the upper block when it was built on self-help basis. However, those clubs serve only about 50% of the resident youth males over 12 years old and within reasonable distances from their homes. Other 20% of those youth males usually go to other clubs in the surrouncling residential areas while the remaining 30% think they are in need of recreational facilities. Those sometimes need to go to stadium centre or elsewhere. Proposed club and cinema within the neighbourhood service centre have not yet been implemented. From observations and interviews, various are also used as recreational and cultural centres for the males who intend to learn religious lessons in their idle time (Fig 63).

Males have nothing to do in those existing recreational and cultural facilities, although they are in need of such centres to entertain and to learn any relevant studies, especially for housewives.

Usually adult males throughout the neighbourhood do not accept the establishment of those clubs or youth centres inside the open spaces of the residential blocks. This was noticed from the interviews and was ascertained to the following:

1. From a social point of view, these clubs are only used by males, no adults see that youth spend a lot of their time in those places which make them idle and this may bring bad behavior results.

2. From an environmental point of view, some households are that any building, if erected in the open spaces of their block, may obstruct the air movement, since open spaces serve as environmental areas to catch the breezes.

3. Another point of view, that the area of the whole open space has to be left for the public use of residents of the block. Therefore, any building use
reduce the existing area and thus reduce the communal activities which can be practiced in that open space.

Most probably these conflicts resulted from the deficiency of the plan to satisfy the needs for recreational facilities within the block level beside the area of the open space. Another community that community centers which accommodate the different family members may be more satisfactory for these residents.

6.7.6 Shopping Facilities:
Existing shopping facilities in the neighborhood include the following:

1. Market Shops:

These exist mainly on the main road within the blocks and in the bye-lanes. Construction of these shops is carried out in the residential blocks of the south, southeast, and southwest within convenient walking distance especially for children and women.

2. Shopping Centers:

There are the shopping centers in the neighborhood which contain one large supermarket, bakeries, clothing shops, and five small retail centers. These buildings are used as residential units in the upper floors and commercial shops are on the ground floor. (Plate 6.8.1)

3. Ribbon development shopping facilities:

There are the commercial shops facing the main paved road of the neighborhood. The Al-Sha’faa Shop contains the groceries, car service shops, pharmacies, furniture shops, hairdressers, tailors, and other services. These shops are mainly used by the people passing by these roads and other users of the nearest households of the area. (Chalkboard, Fig 6.7.11.)
(a) vegetable & meat market

(b) charcoal zoribas

Photo (6.8): EXISTING SHOPPING CENTRE
Of the households, it was noticed that about 98% of the households buy their daily consumable goods from the local corner shops while the rest visit other places and social centres. Clothes and other periodic goods are usually bought from outside the neighbourhood and because there is no transport facility within the area.

In the area, about 50% of the households buy their food from the local markets and the rest of the market, which is usually associated with the nearby railway station because of lack of household transport facilities. In a survey, the percentage of the respondents who do not like the neighbourhood, 60% of them said that they are dissatisfied with the area because of transport facilities.

6.2.6 Economic Facilities (Employment):

The demand of the neighbourhood employment range between government and private, the employees are both unskilled or moderately skilled. They are either employed within the neighbourhood or engaged in administrative jobs. About 35% of the respondents work within the same neighborhood and are the artisans, carpenters, blacksmiths and shop owners in addition to the using public transport vehicles. The remaining workers are employed outside the neighborhood. In order to reach other surrounding areas. These people encounter difficulties in reaching their places of work as a result of overcrowded public transport especially during peak hours.

6.2.8 CONCLUSION:

From the previous evaluation carried on the existing neighborhood, the following was concluded:
Fig. (3.4) Use of existing shopping facilities and mode of transport
Fig (6.9) Employment & Place of Work
The authorities failed to implement many of the social facilities, some of which had to be executed on self-help basis. This led to the utilization of inefficient and incomplete social facilities.

Generally, the orientation and the layout of the neighbourhood caused a large number of residents usually suffer from the long distances they walk within the neighbourhood or to the public transport routes. Therefore, some residents spend a lot of money on taxis for simple errands which they can not afford.

Although the residents of Aisha had good relations, a lot of conflicts appeared during use of the common open spaces. This reflected the deficiency of the official plan in deciding the number, sizes and locations of these open spaces.

The unplanned intrusion of the higher-income class residents in the neighbourhood created some social and environmental disturbances to the original low-income class residents. They do not interact with the low-income group neighbours in the existing social facilities and their high buildings block the kind of these neighbours except in some convenient locations where they can use their open courts and verandas.

People within the neighbourhood suffer from the polluted environment as a result of the improper garbage collection systems and the bad drainage system especially during rainy seasons.

Conditions of overcrowding are suffered by the educational and religious facilities as a result of the limited number and capacity of the executed facilities.

Existing shopping centres do not adequately offer the residents the goods needed within this level of residential areas. Therefore, most of them usually buy the vegetables, fruits and meat from outside the neighbourhood.

Some physical changes have been added to the original one of the neighbourhood. These include:
(1) Outside extensions to houses include permanent additions of temporary materials and permanent extensions. Temporary extensions have been made to suit the needs of various small-scale changes.

(2) Various indoor and outdoor clubs and rooms have been built within the houses and officially opened as open spaces.

(3) Various shops and service development shopping centres have been established within the houses, providing daily convenience to the residents.
In this study, the planning of residential neighbourhoods in Greater Khartoum was discussed and evaluated. Evaluation was based on the general criteria required for the rational planning of the residential neighbourhoods and on the socio-economic characteristics of Greater Khartoum. The plan of Almahafa neighbourhoods was chosen as a case study, the official plan, the present physical neighbourhoods and the present residents' interaction with the plan were all evaluated and certain remarks were then raised.

In this chapter the general concluding remarks about the plan of those neighbourhoods will be stated. General recommendations for their planning will follow the specific recommendations suggested for Almahafa embankment.

7.1. CONCLUSIONS

7.1.1. Residential neighbourhoods are live parts that contain the inhabitants of the city. Criteria for rational planning of such neighbourhoods should be derived from the integration of the various environmental standards acting together in the neighbourhood plan. Residents of a neighbourhood should have a plan which matches their social characteristics and behaviour, employment and income levels, cultural values and their existing level of construction and infrastructure technology. Those aspects should be kept within the existing natural physical environment and the legal aspects.

7.1.2. The residential neighbourhood plan should satisfy such criteria like optimal density, reasonable walking distance, safe pedestrian movements, satisfactory infrastructural service network, social and economic facilities and design norms for
house size and layout and safety which all have to be based on the estimated requirements and affordabilities of the residents.

7.1.3. Before 1960, the planning attempts of residential neighbourhoods in Greater Khartoum were based on the economic situation of the residents segregating the whole community into three social groups according to their income levels which were expressed in their different densities, layout, plot sizes, level of services and quality of building materials. In Doxiadis Master Plan (1961), the planning and the provision of services for residential areas was based on a clear structure which included seven community levels. The upper level was the whole city, the middle was the neighborhood and the lower level was the cluster of houses. In Merit Plan (1975), it was decided that the residential patterns found in Khartoum addressed different social needs and solved diverse environmental problems. The Merit Plan suggested a direction to alternative planning patterns considering the community and privacy principles. In Khartoum structure Plan (1990), the planning of residential areas was based on general structure including eighteen districts of population (250,000 - 300,000). Generally, different philosophies were presented; while Doxiadis (1961) gave detailed plan for the neighbourhood unit, Merit Plan gave general ideas and the Structure Plan gave certain standards about the residential density, the infrastructural services, costs and the space standards required for each facility.

5.1.4. Greater Khartoum usually receives large number of immigrants of different tribal origins and different social and economic characteristics. Low-income groups have the larger families and the larger social interaction and they represent more than 80% of the total population. Generally, the percentages of children of the first age group and the school-
going ages are the higher, thus, more attention should be given to their needed social facilities.

7.1.5. As far as the layout and orientation of Alshahał neighbourhoods are concerned, the official plan did not well consider the interaction of the four neighbourhoods neither with respect to each other nor with other parts in the city. Thus, clear difficulties were noticed in the movement of the residents within the neighbourhoods, as well as to the outside, especially for the neighbourhoods oriented east-west, i.e. Alshahał Charb.

7.1.6. The absence of most of the needed social and economic facilities within the neighbourhoods made the residents in different age groups usually go outside the neighbourhoods, most probably to Khariyam centre, for any simple needed facility, especially for health, recreation and shopping. The unavailability of these facilities resulted either due to the official plan deficiency or to the failure of the authorities to execute many of the facilities designated in the plan due to administrative mismanagement, lack of monitoring and plan follow-up and limited financial resources.

7.1.7. The present plan of Alshahał neighbourhoods shows that the official plan was not based on the criteria required for such socio-economic characteristics and did not consider the present social and economic changes. Thus, some physical changes and additions were made by the residents during the life-time of the neighbourhood:

1. Open spaces were partially built as social facilities which were not considered in the official plan. These facilities are kindergartens (in some cases they were accompanied with mosques or masjids), swimming for some religious groups, and youth clubs (these are needed for each block separately and implemented on self-help basis). This indicated that the area proposed for open spaces was usually not fully utilized by the surrounding residents for
outdoor commercial uses. This might be due to their large sizes and dispersed locations.

ii. Outside extensions were added to the house plots in order to gain more area for households who were not satisfied with their plot sizes.

iii. First and Second Class building standards were added in the neighbourhoods, although they were officially planned as Third Class residential areas. This may be referred to the rising income of those households.

iv. Shopping centres are partially developed and still large open spaces exist in the neighbourhood centers, while a large number of corner shops were established within the plots in each block. This facility was not considered in the plan, although it ensured its importance above the other shopping facilities because it provides daily consumable goods within convenient walking distances. Moreover, it generates income to owners.

v. Ribbon development shopping facilities were established within the plots which face to the main traffic routes. This phenomenon led to the change of most of these plots into commercial uses. They reduce the probability of the neighbourhood centers growing because they usually receive customers from outside the neighbourhoods in addition to those of the neighbourhood. Alsharafa being one of the Third Class areas, has a low purchasing power which discourages merchants to start doing their work in its neighbourhood service centers.

7.2 RECOMMENDATIONS FOR ALSHARFA EXISTING NEIGHBOURHOODS:

7.2.1 East-west transport routes should be developed to make it easy for the residents to move within or around the neighbourhoods.

7.2.2 First and Second Class building materials can be permitted as:

i. One story buildings throughout the whole
neighbourhood;

ii. Two story buildings for those who are facing to the
open spaces;

iii. Three story buildings only for those facing the
neighbourhood services centers and main
traffic roads; on condition that the neighbouring
residents are not be affected by the
building.

7.6.3 Open spaces within the blocks can be surrounded by
trees with isolated safety barriers. The middle
area can be greened as a lawn to be used for
football games. This will create pleasant
environment and reduce the effect of glare, heat and
dust. It can be locally organized and executed.

7.6.4 The areas which are not yet built within the service
centers can be planned as follows:

i. Proposed areas for shopping centers to be reduced
and limited to the existing need, because the new
shopping facilities i.e. corner shops and those
facing the main traffic routes accommodated most of
the daily consumable goods. The shopping areas
within the centers can be developed in multi-story
buildings to accommodate residential administrative
and commercial facilities to make the centers more
lively. The reserved area combined with the reserved
area can be used for other needed functions.

ii. The area proposed for a club and a cinema can be
integrated as a community centre for recreational
and cultural activities for all age groups in the
neighbourhood.

iii. An open area should be left as a public square for
the ceremonial gathering of the residents of the
whole neighbourhood.

iv. Proposed health centers should be considered and
executed, while dispensaries can be accommodated
within the primary schools areas.

v. Other service facilities, e.g. post office, police
station, fire fighting station, etc. should be
considered within the new layout of the centre.
vi. Existing bakeries, charcoal ovens, etc. should be well grouped and organized to match the demand of the neighborhood. Vegetables and meat should have enough space in the shopping centre (existing stalls are enough).

7.2.4 Water and electricity supply and the telephone facility should efficiently be provided to match the new demand of the neighbourhoods.

7.2.5 A proper rain water drainage system should be applied. The system should start from the smaller roads within the blocks and then to the main network outside the neighbourhoods.

7.2.6 For the rubbish collection, small containers should be provided for each building frontage to keep the rubbish away from the reach of animals. The same collection system can be applied while more vehicles are to be introduced to overcome the problems of delays.

7.2.7 Proposed intermediate schools should all be established and more primary schools are to be implemented to meet the existing need of the neighbourhoods.

7.2.8 A reasonable electric lighting system should be provided throughout the roads of the neighbourhoods to make it safe for the residents to move during nights.

7.2.9 Green buffer zones should be implemented to protect the residents by the sides of the main traffic roads from dust, noise and other nuisance. Also safety precautions are to be applied to the points where children need to cross main traffic routes.

7.2 GENERAL RECOMMENDATIONS FOR THE PLANNING OF RESIDENTIAL NEIGHBOURHOODS IN GREATER KHARTOUM:

7.3.1 Residential neighbourhoods in Greater Khartoum should be planned as part of the hierarchical structure of the city. The system should start from the house level up to the city level. Thus, the
The overall layout, the infrastructural network linkages, the social and the economic facilities should all follow a clear integrated structure.  

7.3.2 The planning of residential neighbourhoods should be aimed at satisfying the essential requirements of the residents. This can be assessed through comprehensive social surveys to be carried out in order to understand the characteristics of the society.  

7.3.3 Public participation programmes can be introduced into the planning process of the residential neighbourhoods to help to infer the various interests of the community, to encourage cooperation between the residents and to reduce conflict of interests which may appear in the physical neighbourhood.  

7.3.4 Physical planners should consider the adjoining of the different income classes within a residential neighbourhood, hence, expected future social or economic changes may make no problem in the residential environment. In addition, social segregation and disintegration may be resolved.  

7.3.5 More research should be done on the residential environment and the considerations of the social and economic aspects in the neighbourhood plans. Also more study should be given to the reserved areas within the neighbourhoods, considering their numbers, sizes and their locations, because they sometimes solve problems of expansion and change which may occur in the neighbourhood.


APPENDIX
UNIVERSITY OF KHARTOUM
FACULTY OF ENGR. AND ARCHITECTURE
DEPARTMENT OF ARCHITECTURE
N. No. PHYSICAL PLANNING COURSE
SECOND YEAR (1991-1992)

CRITERIA FOR RATIONAL PLANNING
OF RESIDENTIAL NEIGHBOURHOODS
IN GREATER KHARTOUM
(WITH REFERENCE TO ALademA NEIGHBOURHOODS
AS A THIRD CLASS RESIDENTIAL AREA)

QUESTIONNAIRE

1. PERSONAL DATA :

1.1. Family size : < 4 | 4-7 | > 7 |
1.2. No. of households : 1 ( ), 2 ( ), > 2 ( ).
1.3. H//L occupation : Manual labour ( ),
Employee ( ),
Self-employed ( ),
Others ( ).
1.4. Income level : Low ( ), Middle ( ), High ( ).
1.5. Other sources of income : Other person ( ),
Other jobs ( ),
Benefits ( ).
1.7. Land tenure : Owner ( ), Tenant ( ), Other ( ).
1.8. Way of getting the plot : By sale ( ),
By heritage ( ),
Others ( ).
1.9. Area of the plot : ( ).
1.9. Standard of buildings : First class ( ),
Second class ( ),
Third class ( ).
2. OPEN SPACES:

2.1. How do you use open spaces?

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</tr>
<tr>
<td></td>
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<td>5</td>
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<td></td>
<td>6</td>
</tr>
<tr>
<td>OPEN SPACE WITHIN THE BLOCK</td>
<td></td>
<td>2</td>
<td></td>
<td></td>
<td>1</td>
</tr>
<tr>
<td></td>
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<td>3</td>
<td></td>
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<td>2</td>
</tr>
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<td>4</td>
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<td></td>
<td>3</td>
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<tr>
<td></td>
<td></td>
<td>5</td>
<td></td>
<td></td>
<td>4</td>
</tr>
<tr>
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<td></td>
<td>6</td>
<td></td>
<td></td>
<td>5</td>
</tr>
<tr>
<td>OPEN SPACE WITHIN THE SERVICE CENTRE</td>
<td></td>
<td>1</td>
<td></td>
<td></td>
<td>6</td>
</tr>
<tr>
<td></td>
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<td>2</td>
<td></td>
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<tr>
<td></td>
<td></td>
<td>6</td>
<td></td>
<td></td>
<td>6</td>
</tr>
</tbody>
</table>

ACTIVITIES:
1. Children playing.
2. Foot ball games.
3. Adult gathering.
4. Permanent household.
5. Sleeping.
6. For work.

2.2. Remarks: .................................................................

NOTICE:
For the social and economic facilities, fill the space with the figure of the suitable answer out of the following:

A. Location:
1. Within the block
2. In another block
3. In another neighborhood
4. Out of Almaty

B. Mode of transport:
1. Private vehicle
2. Public vehicle
3. On foot

C. Level of accessibility:
1. Easy
2. Rather difficult
3. Difficult

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3. SOCIAL FACILITIES:

3.1. HEALTH FACILITIES:
3.1.1. Where do you usually go for medical services?

<table>
<thead>
<tr>
<th>NO.</th>
<th>A.</th>
<th>B.</th>
<th>C.</th>
<th>A.</th>
<th>B.</th>
<th>C.</th>
<th>A.</th>
<th>B.</th>
<th>C.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

3.1.2. Remarks: ...........................................

3.2. EDUCATIONAL FACILITIES:
3.2.1. Where do students study?

<table>
<thead>
<tr>
<th>No. of Students</th>
<th>Kindergarten</th>
<th>Primary School</th>
<th>Intermediate School</th>
<th>Secondary School</th>
</tr>
</thead>
<tbody>
<tr>
<td>A.</td>
<td>B.</td>
<td>C.</td>
<td>A.</td>
<td>B.</td>
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<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

3.2.2. Remarks: ...........................................

3.3. RELIGIOUS FACILITIES:
3.3.1. Where do you usually practice religious activities?

<table>
<thead>
<tr>
<th>FACILITY</th>
<th>MOSQUE</th>
<th>ZAMIA</th>
</tr>
</thead>
<tbody>
<tr>
<td>A.</td>
<td>B.</td>
<td>C.</td>
</tr>
<tr>
<td>&lt; 12 years</td>
<td></td>
<td></td>
</tr>
<tr>
<td>12 - 25 years</td>
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<td></td>
</tr>
<tr>
<td>&gt; 25 years</td>
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<td></td>
</tr>
</tbody>
</table>

3.3.2. Remarks: ...........................................
3.4. RECREATIONAL FACILITIES:
3.4.1. Where do you usually practise recreational activities?

<table>
<thead>
<tr>
<th>FACILITY</th>
<th>MALES</th>
<th>FEMALES</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>A</td>
<td>B</td>
</tr>
<tr>
<td>AGE</td>
<td></td>
<td></td>
</tr>
<tr>
<td>&lt; 12 YEARS</td>
<td></td>
<td></td>
</tr>
<tr>
<td>12 - 25 YEARS</td>
<td></td>
<td></td>
</tr>
<tr>
<td>&gt; 25 YEARS</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

3.4.2. Remarks: .................................................................

3.5. SHOPPING FACILITIES:
3.5.1. Where do you usually practise shopping activities?

<table>
<thead>
<tr>
<th>GOODS</th>
<th>VEGETABLE &amp; MEAT</th>
<th>OTHER DAILY GOODS</th>
<th>PERIODICAL GOODS</th>
</tr>
</thead>
<tbody>
<tr>
<td>AGE</td>
<td>A, B, C</td>
<td>A, B, C</td>
<td>A, B, C</td>
</tr>
<tr>
<td>&lt; 12 YR.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>12-25</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>&gt; 25</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

3.5.2. Remarks: .................................................................

4. EMPLOYMENT:
4.1. What kind of occupations have been practiced by the family members?

<table>
<thead>
<tr>
<th>MEMBERS</th>
<th>MANUAL LABOUR</th>
<th>EMPLOYEE</th>
<th>SELF-EMPLOYEE</th>
<th>OTHERS</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>B, C</td>
<td>A, B, C</td>
<td>A, B, C</td>
<td>A, B, C</td>
</tr>
<tr>
<td>B</td>
<td>A, B</td>
<td>A, B, C</td>
<td>A, B, C</td>
<td>A, B, C</td>
</tr>
<tr>
<td>C</td>
<td>A, B, C</td>
<td>A, B, C</td>
<td>A, B, C</td>
<td>A, B, C</td>
</tr>
</tbody>
</table>

4.1.2. Remarks: .................................................................
After this study was completed and the final exam was held, it was decided to add the following information.

The so-called Neighbourhood Theory in city planning is generally credited to Clarence A. Perry whose hypothesis was outlined in detail in the New York Regional Plan series, Neighbourhood and Community Planning, in 1929. The essence of the concept was also included in his book Housing for the Machine Age, in 1939.

The value of the neighbourhood concept was not primarily in meeting the professional planner’s need for smaller statistical area for the physical arrangement of streets, utilities, and building layout, but in providing a focal point for a feasible program for bringing people together to discuss local problems of mutual concern.

Perry’s original concept, based upon the need for “neighbouring”, only later became a lever for systematizing public works within defined service areas.

The neighbourhood concept was described as an ideal sized elementary school district area, bounded by minor thoroughfares, rather than intersected by these, and within a convenient walking distance of the elementary school building situated upon a common green (neighbourhood park and playground) which would become the community centre and focal point of neighbourhood activity. It was designed to recognize a fundamental limitation concerning the size of an area of the number of people who can effectively get together and actively participate in matters that affected them individually and as neighbours.

Prior to 1920s the possibility of public controls and restraints, as well as long-range planning concepts, was virtually unheard of. It was within the general context of this early situation that Clarence Perry spelled out the need for citizen participation at the local neighbourhood level.

Perry noted that the difference between neighbourhoods and communities is based primarily upon the kind of association, or lack thereof, which occurs
between residents of a particular area, namely upon citizen participation.

John Dewey wrote that there is more than a mere verbal connection between the words "community", "common", and communication. He has expressed the thought that people come to have things in common, or a common understanding, as a result of communication. (1)

Dr. Louis Krits, noted sociologist and planner, stated

"I understand 'community' not as an arbitrary political unit like a city, county or state; I mean rather a concept of people, of interest, and functions that cannot be thought of separately. A community is any group whose problems, if they can be solved at all, can best be solved by the participation of all who have common objectives and have agreed to pursue them in common". (1)

It can thus be said that communication or neighborhood organization develops consensus of agreement, unified effort, or basis by which local problems can be solved through citizen participation.
