ASSESSING THE LEVEL OF PHYSICAL DEVELOPMENT OF NORTH EASTERN PART OF APATAPITI IN AKURE SOUTH OF ONDO STATE

ADARADOHUN, O. S. AND ALAUSA, O. A.
DEPARTMENT OF SURVEYING & GEOINFORMATICS,
THE FEDERAL POLYTECHNIC ILARO, OGUN STATE.
yemtoks26@gmail.com & alausaolalekan11@gmail.com

ABSTRACT

A planned environment is essential in determining the physical development of an environment. It is therefore necessary to assess the rate of development in a place with relation to the increase in population to adequately maintain a sustainable environment. This research focuses on the application of detail survey to investigate and analyse the rate of development within North Eastern part of Apatapiti layout in Akure South Local Government Area of Ondo State. The 2-D geospatial data of the features existing on the study area were acquired using the Total Station instrument to determine their planimetric positions. The planimetric positions were plotted, the layout design was also done using the AutoCAD 2007 software and the result were analysis using Microsoft excel. The percentage coverage of each sectors is residential (61%), commercial (29%), agricultural (7%), social (2%),and Educational (1%), while recreational and industrial are (0%) respectively. Based on the percentage of land usage, the study area is dominated by uncoordinated residential buildings, commercial centres, and educational centres. The paper recommend that a proper planning activities in the area should be revisited towards providing sustainable settlements.

Keywords: *Development rate, sustainable, Sectors, Detail survey, layout.*

1.0 INTRODUCTION

Planned development is the gradual growth that occurs from control of urban development by a local government authority, from which license was obtained to build a new property or change an existing one. The world today has been divided into developed countries, developing countries and underdeveloped countries, this division is based on income per capita; gross domestic product {GDP}, industrialization, human development index, poverty {adjustable criterion based on GNI{Gross national income} per capita average of over three years}, human resources weakness {based on indicators of nutrition, health, education and adult literacy}, economic vulnerability. The developed countries includes Japan in Asia, Canada and United state in North America, Australia and New Zealand in Oceania, in international trade statistics the South Africa custom union is also treated as developed region. Developing countries according to international monetary fund's world economic outlook database October 2018 include Afghanistan, Algeria, Argentina, Brazil, Cameroon, Ghana,

Nigeria etc, while underdeveloped countries, include Burundi, Chad, Comoros, Laos, Haiti, Yemen etc.

According to Gary Hack et al. (2009), planning and development issues today are complex and frequently overlapped with other policies. The local plan must recognize the wider policy context and set out a strategic spatial framework a clear view ahead in development terms for the area the local plan covers.

Doebele (1985), said urban land is among the most valuable economic and social resources of any nation. It cannot be properly managed without adequate system for measurement and recording of the boundaries of parcels with the details existing in a map, and registration of legal rights related to each parcel. This Establishment of a good cadastral layout system even in the re-design and review of emerging slums and squatter settlements in our cities is imperative to positive response to the demand for quality life and environment.

Base map is a layer with geographical information that serves as a background, it provides context for additional layers that are overlaid on top of the base map. Lack of base map over an area, always led to poor judgment in the decision making towards physical development of such area. This area often suffer from sporadic development which is as a result of the uncoordinated distribution of sectors within the area.

In most cases there is always an uneven share rate of the land usage, where some sectors cover large percentage of the area and some other sectors are left unattended to. The sporadic development has made access to essential facilities within the area to be difficult.

This study focused at producing a new base map showing the extent of land usage, through a detail survey approach. This was done by using necessary survey equipment such as total station and it accessories to acquire the spatial data of the boundary and all details existing within the area. Furthermore, activities within the study area where zoned into sectors which were shown by subdividing the total area into the quantity of the sector active within the study area.

2.0 MATERIALS AND METHOD

2.1 STUDY AREA

North Eastern part of Apatapiti community is located at FUTA south gate, off FUTA road, with boundary coordinates of latitude 07^0 17’ 29’’N, longitude 05^0 08’ 45’’E, latitude 07^0 17’ 31’’N, longitude 05^0 09’ 03’’E, latitude 07^0 17’ 18’’N, longitude 05^0 09’ 03’’E and latitude 07^0 17’ 21’’N, longitude 05^0 08’ 47’’E, Akure South Local government area, Akure, Ondo State, Nigeria. Apatapiti community is bound by FUTA South gate area towards the North, bound by FUTA main campus towards the west, bound by Awole community towards the south and Alaba layout towards the East. Apatapiti community can be accessed coming from FUTA by passing through the south gate. It can also be accessed coming from Akure township by passing through FUTA junction heading towards FUTA South gate.

FIG 1.0 MAP OF NIGERIA SHOWING ONDO STATE

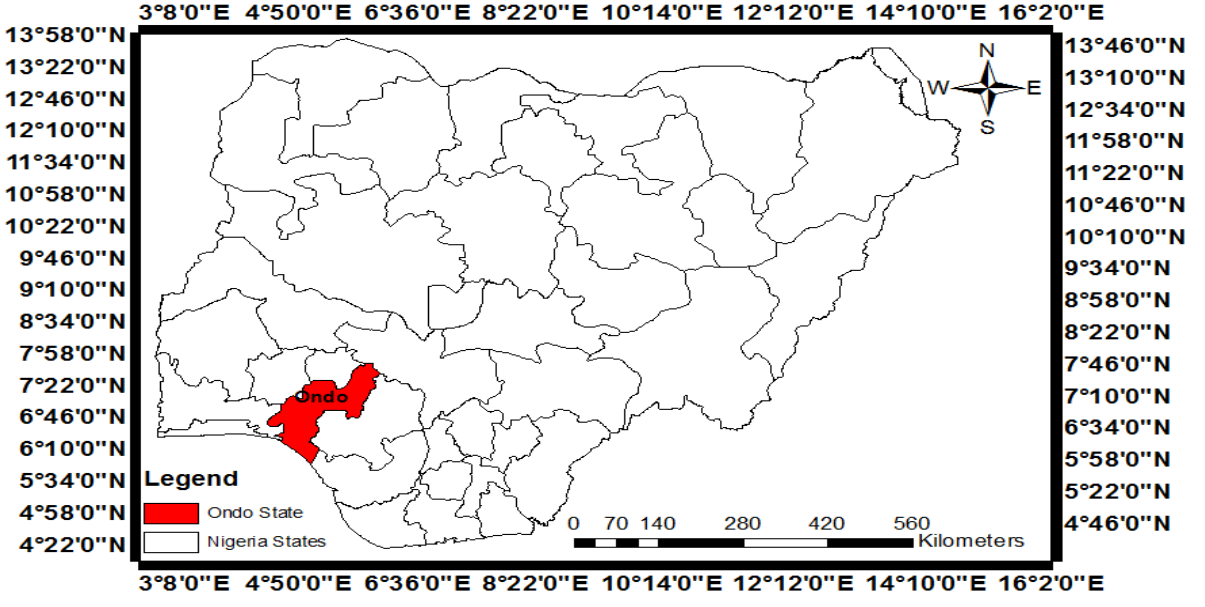


FIG 1.1 MAP OF ONDO STATE SHOWING AKURE SOUTH LOCAL GOVT.

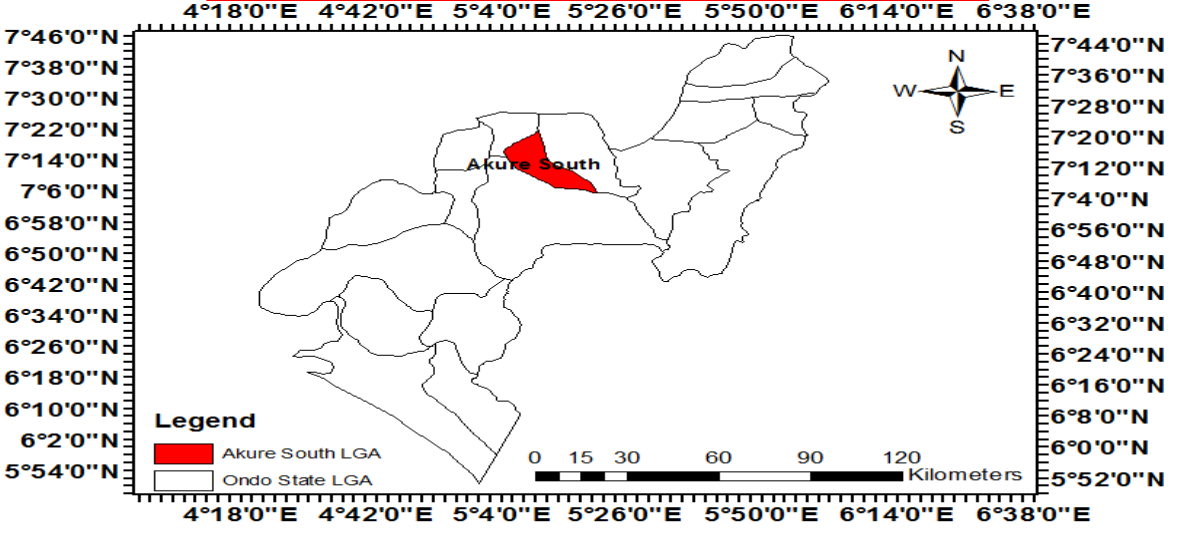
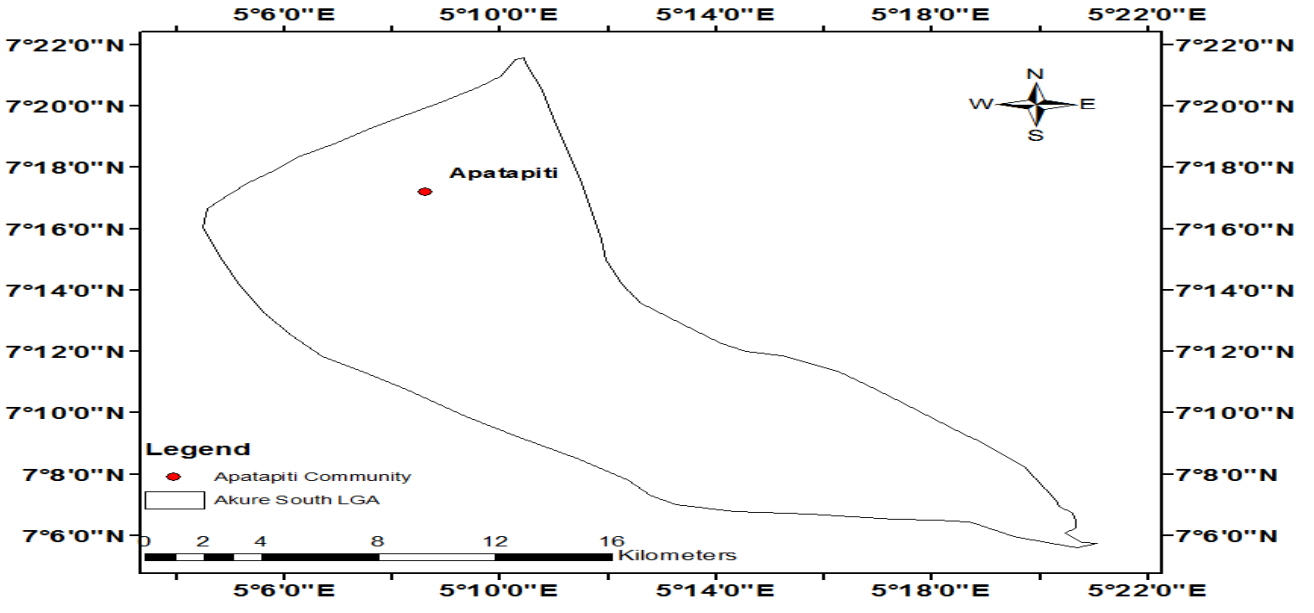


FIG 1.2 MAP OF AKURE SOUTH APATAPITI



2.2 MATERIALS

According to Ghilani & Wolf (2012), detail survey are made to determine the locations of natural and cultural features on the Earth's surface. Once located, these features can be represented on maps. Natural features normally shown on maps include vegetation, rivers, lakes, oceans, etc. Cultural (artificial) features are the products of people and include roads, railroads, buildings, bridges, canals, boundary lines, etc. The relief of the Earth includes its hills, valleys, plains, and other surface irregularities. Lines and symbols are used to depict features shown on maps. Names and legends are added to identify the different objects shown. To achieve this a South total station, tracking rod, reflector, tripod stand, computer system Incorporated with Microsoft excel for data manipulation and a AutoCAD software for data processing.

2.3 METHODS

In evaluating the state of the study area there are several methods and various instrumentation that can be adopted such as GPS method, using Differential Global Positioning system, photogrammetry method using drone, aircraft and camera, remote sensing method using satellite imagery.

This study adopted the ground survey method which included perimeter survey, detail survey and a layout design to revealed the level of physical development of the study area, this area based on it use is divided into different sectors such as residential buildings, commercial centres, and educational centres, these

sectors were unevenly (scattered) distributed while sectors such as recreational and industrial were left out. Therefore, the result from this method can serve as a base for proper development. The spatial and attribute data acquisition will include;

1. In-situ checks on control pillars

2. Perimeter Traversing and Detailing using total station

- **In-Situ Checks On Control Pillars**

The term In situ means to be in the exact position. The controls to be used must be in their exact position to confirm this, the angular and linear checks were carried out on the three control pillars: FUTA GPS 1, FUTA GPS 2, and FUTA GPS 3 using Total Station instrument which is a combination of both Electronic Distance measurement (EDM) and digital Theodolite.

- **Perimeter Traversing and Detailing using total station**

This survey method could be described as an orderly sequence determination of the length and directions of lines between points on the earth surface with a view to determine their relative position and with reference to known points (Miller, 2007). However, in this project a close traverse was carried out with the total station (Leica TC 307) to fix the boundary (perimeter) also all details within the project area were fixed, this was carried out by coordinating the edges/corner points of the objects/features in the project area. All acquired data were stored in the instrument storage device.

3.0 RESULTS AND DISCUSSION

The data acquire during the site work where downloaded using the cable attached to a computer system, the total station software was used alongside. The coordinates where plotted both for the boundary and the buildings within, showing the occupied position from the vacant area. The layout design was done by subdividing the study area into blocks and plot in order to categorize them into sector easily and be able to analyse the land use pattern. Land subdivision regulations define standards for layout and lot sizes, street pattern, and procedures for assigning land for private and public uses. Land subdivision provides the essential characteristics of land uses, street patterns and public utilities. The amount of land which is thereby dedicated for public purposes differs between countries and may represent a substantial portion of the total urban land (Courtney, 1983). The table below shows the list of features existing within the study area.

Table 1.0 showing the numbers of Natural and Man-made Features that were detailed

S/N	FEATURES	NUMBERS
1	Residential Buildings	126
2	Temporary Structures	8
3	Uncompleted Buildings	13
4	All Existing Buildings	141
4	Shops	51
5	Transformer	2
6	Water Tanks	5
7	Well Water	12
8	Fish Ponds	2
9	Electric Poles	64
10	Farming Land	4
11	Big Tree	6
12	Mast	1
13	Refuse Dumping site	2
14	Existing survey beacons	5

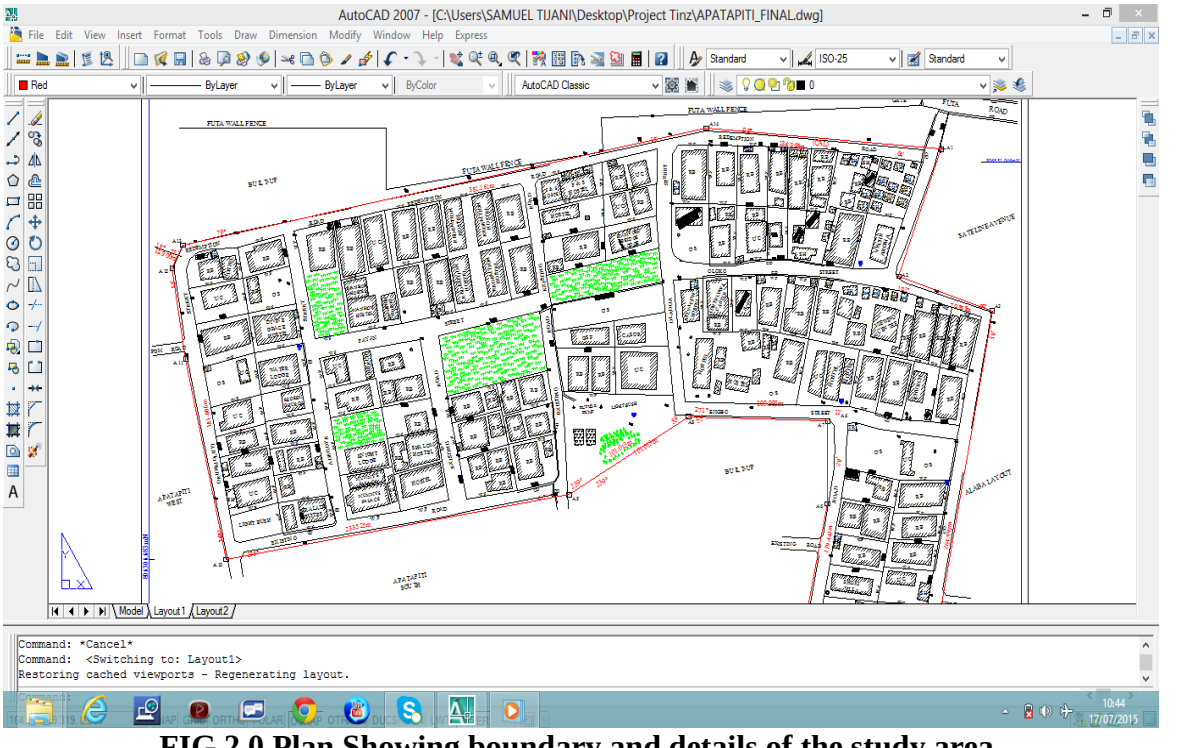


FIG 2.0 Plan Showing boundary and details of the study area.

From the data processed the study area covers 115781.883sq.mts which is an equivalent of approximately 173 plots and the whole area was splitted into blocks which amounted to a total of eight {8} blocks in all. This included block A to block H.

BLOCK A	
T AREA=	12522.06
	AREA (m2)
PLOT 1	749.133
PLOT 2	828.629
PLOT 3	944.147
PLOT 4	926.401
PLOT 5	659.359
PLOT 6	462.009
PLOT 7	1254.329
PLOT 8	627.441
PLOT 9	636.68
PLOT 10	754.409
PLOT 11	830.032
PLOT 12	848.972
PLOT 13	579.145
PLOT 14	598.869
PLOT 15	569.609
PLOT 16	589.334
PLOT 17	663.563

BLOCK B	
T AREA=	11266.15
	AREA(m2)
PLOT 1	1687.989
PLOT 2	707.306
PLOT 3	602.955
PLOT 4	771.05
PLOT 5	563.773
PLOT 6	2595.926
PLOT 7	696.544
PLOT 8	1252.569
PLOT 9	1095.017
PLOT 10	609.606
PLOT 11	683.413

BLOCK C	
T AREA=	7170.558
	AREA(m2)
PLOT 1	350.059
PLOT 2	350.576
PLOT 3	644.483
PLOT 4	1325.148
PLOT 5	1023.02
PLOT 6	630.487
PLOT 7	630.428
PLOT 8	672.66
PLOT 9	727.991
PLOT 10	815.706

BLOCK D	
T AREA=	7183.507
	AREA(m2)
PLOT 1	2650.768
PLOT 2	588.628
PLOT 3	780.148
PLOT 4	946.31
PLOT 5	700.798
PLOT 6	632.285
PLOT 7	884.57

BLOCK F	
T AREA=	11267.96
	AREA(m2)
PLOT 1	874.637
PLOT 2	711.835
PLOT 3	780.534
PLOT 4	510.827
PLOT 5	560.341
PLOT 6	603.838
PLOT 7	1020.689
PLOT 8	970.759
PLOT 9	915.449
PLOT 10	683.833
PLOT 11	729.921
PLOT 12	433.006
PLOT 13	910.359
PLOT 14	761.996
PLOT 15	799.933

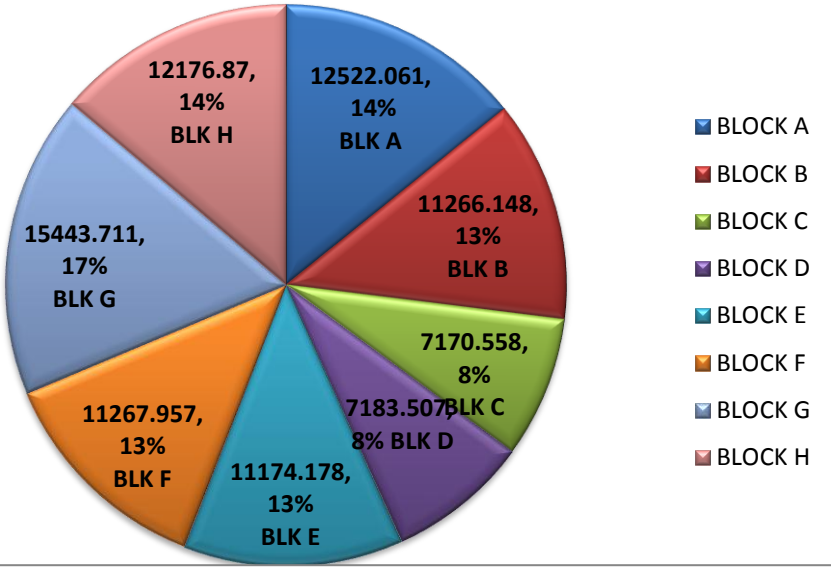
BLOCK E	
T AREA=	11174.18
	AREA(m2)
PLOT 1	897.742
PLOT 2	824.57
PLOT 3	923.411
PLOT 4	1518.215
PLOT 5	1380.739
PLOT 6	546.566
PLOT 7	1042.394
PLOT 8	786.985
PLOT 9	704.692
PLOT 10	748.836
PLOT 11	668.045
PLOT 12	1131.983

BLOCK G	
T AREA=	15443.71
	AREA(m2)
PLOT 1	606.79
PLOT 2	685.615
PLOT 3	566.761
PLOT 4	650.822
PLOT 5	756.841
PLOT 6	617.56
PLOT 7	2125.835
PLOT 8	606.841
PLOT 9	322.767
PLOT 10	764.104
PLOT 11	923.099
PLOT 12	1443.157
PLOT 13	1284.741
PLOT 14	1389.536
PLOT 15	695.002
PLOT 16	680.274
PLOT 17	677.727
PLOT 18	646.239

BLOCK H	
T AREA=	12176.87
	AREA(m2)
PLOT 1	2052.684
PLOT 2	668.368
PLOT 3	798.835
PLOT 4	691.346
PLOT 5	710.867
PLOT 6	729.544
PLOT 7	692.352
PLOT 8	892.916
PLOT 9	724.322
PLOT 10	560.58
PLOT 11	617.598
PLOT 12	733.689
PLOT 13	745.328
PLOT 14	555.327
PLOT 15	1003.114

Tables 2.0 showing blocks, numbers of plots and area covered

FIG 3.0 PIE CHART SHOWING BLOCKS AND AREA COVERED



From the above analysis, it showed that block G with area 15443.711m^2 is the block with largest plot size, while block C with area 1770.558m^2 is the block with smallest plot size.

4.0 ANALYSIS ON SECTORS EXISTING WITHIN THE STUDY AREA, THE AREA COVERED BY EACH SECTORS AND THE PERCENTAGE OF THEIR USAGE.

Land usage of the study area were zoned into sectors. These sectors include Residential, Commercial, Agricultural, Social, Educational, Recreational and Industrial, the Total station instrument was used to observe the boundary coordinates covered by each sectors within the blocks, thereby arriving at the area covered by each sectors. For example, Agriculture: the perimeter area for the farmland within Block B, Block C, Block D and Block E were observed and summed up to give the total area of 8104.732 m^2 within the study area.

This process was applied to determine the area of other sectors and the result obtained is shown below:-

Table 3.0 showing the area of all sectors and their equivalence in plots.

SECTORS	AREA COVERED	EQUIVALENT IN PLOTS
Residential	70626.949m^2	105.45
Commercial	33576.746 m^2	50.13
Agricultural	8104.732 m^2	12.10
Social	2315.638 m^2	3.46
Educational	1157.819 m^2	1.73
Recreational	0 m^2	0
Industrial	0 m^2	0
TOTAL	115781883. m^2	172.87 plots

FIG 4.0: BAR CHART SHOWING AREA OF SECTOR COVERAGE

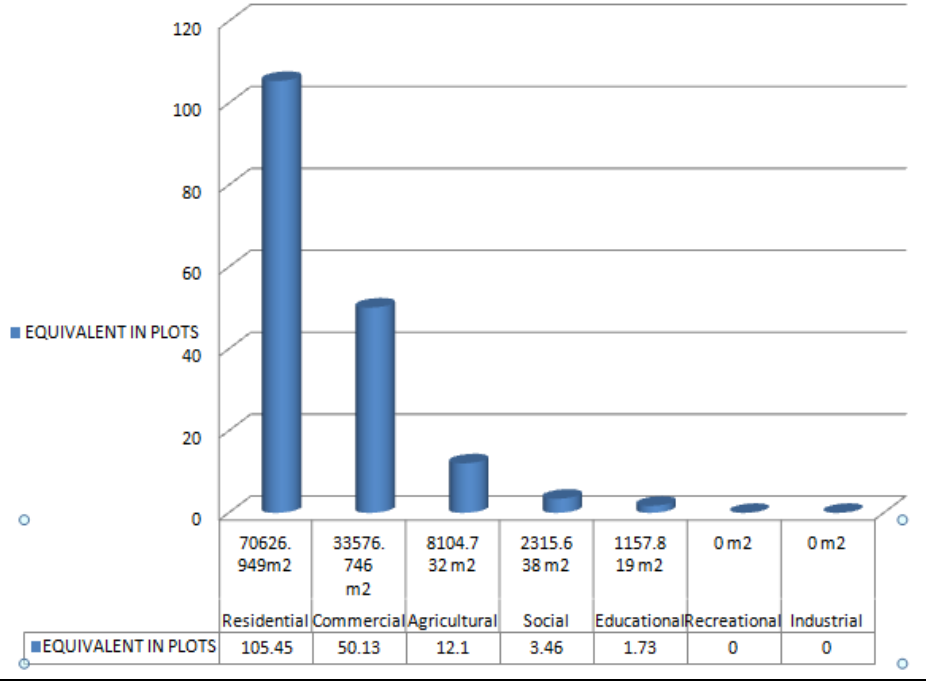
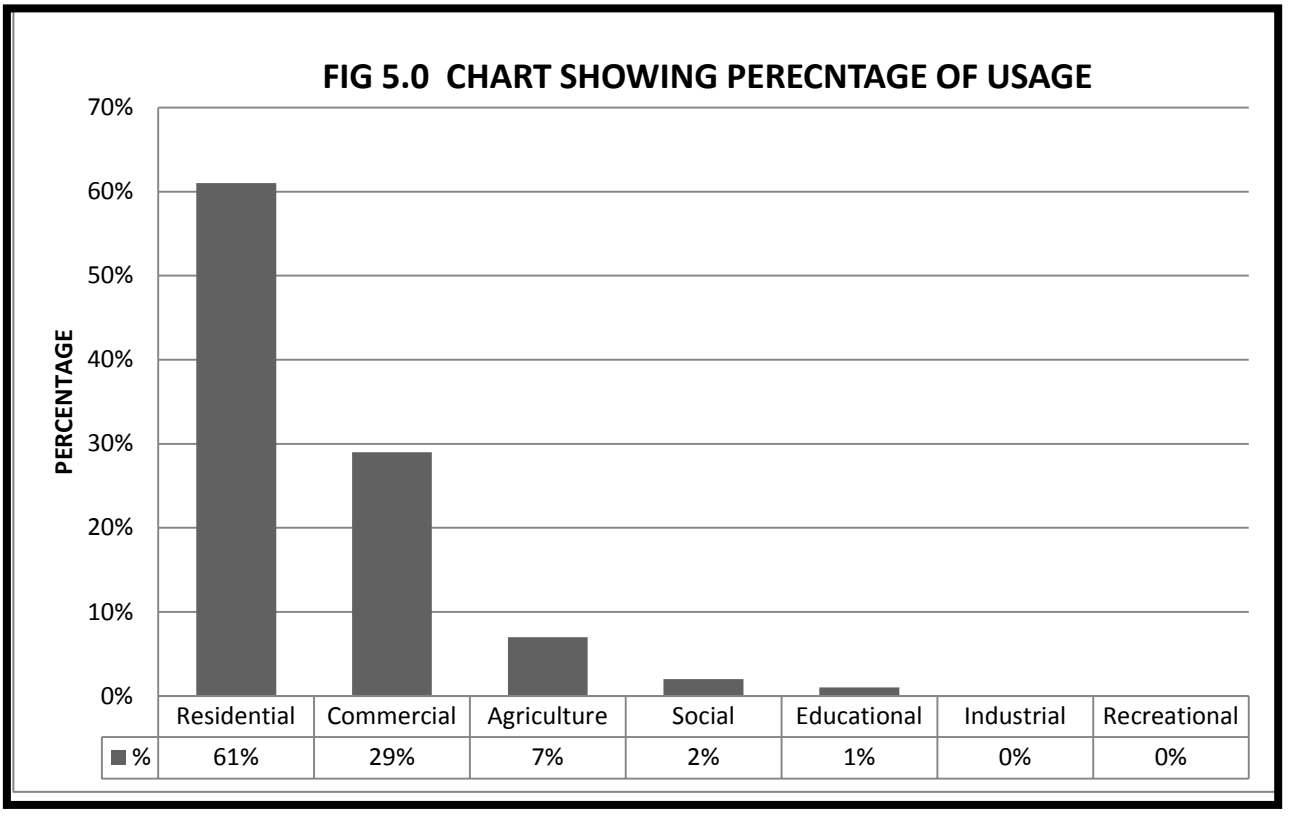


Table 4.0 Percentage Used By Each Sectors Derived From Area Covered

BLOCKS	AGRICULTURE SECTOR		SOCIAL SECTOR		EDUCATION SECTOR		COMMERCIAL SECTOR		RESIDENTIAL SECTOR	
	AREA FOR EACH BLOCKS $\{m^2\}$	% USED	AREA FOR EACH BLOCKS. $\{m^2\}$	% USED	AREA FOR EACH BLOCKS $\{m^2\}$	% USED	AREA FOR EACH BLOCKS $\{m^2\}$	% USED	AREA FOR EACH BLOCKS $\{m^2\}$	% USED
A	0		0	0%	0	0%	6368.004	5.5 %	12272.880	10.6 %
B	1736.728	1.5 %	0	0%	0	0%	4283.930	3.7 %	8336.296	7.2 %
C	1157.819	1%	0	0%	0	0%	3589.238	3.1 %	5325.967	4.6 %
D	2894.547	2.5 %	0	0%	0	0%	3473.456	3.0 %	4283.930	3.7 %
E	2315.638	2%	1157.819	1%	0	0%	6252.222	5.4 %	7294.259	6.3 %
F	0	0	0	0%	0	0%	2431.420	2.1 %	11693.970	10.1 %
G	0	0	0	0%	0	0%	1389.383	1.2 %	16325.246	14.1 %
H	0	0	1157.819	1%	1157.819	1%	5789.094	5.0 %	5094.403	4.4 %
TOTAL AREA COVERED	**8104.732**		**2315.638**		**1157.819**		**33576.746**		**70626.949**	
TOTAL %		**7%**		**2%**		**1%**		**29 %**		**61 %**



5.0 CONCLUSION AND RECOMMENDATION

Due to unavailability of a base map and improper planning which are the basis for proper development, there is therefore a need to identify the current situation of the study area which was achieved in this write up in order to serve as basis for proper planning and future development. When adequate planning process is implemented in the study area, it will guide public spending toward the appropriate places by putting money into projects and improvements most needed and wanted by neighborhood residents, it will also foster social interaction and mixing among neighbors, and among neighborhood residents from diverse backgrounds, leading to more community involvement and more effective problem solving. In a proper planned community residents saves on transportation:- With the ability to walk or bike to work, school, and shopping, neighborhood residents can save large amounts on gas costs and on car service and repair. Some may decide they don't need cars at all, this is however due to the easy accessibility of such sector to the other.

Based on the outcome of the result analysis, we suggest that the involvement of related professionals from the initial stage of any development should be mandatory, Constituted authorities should not over ride or over rule professional advice on peculiar

cases, and the result of the analysis of this should serve as basis to achieve a well-structured development

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