

Land Use Dynamics and Plan Implementation of Orominieke Development Plan, 1975-2018

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ABSTRACT.

Land use change constitutes important and useful area of inquiry for planners especially those involved in land use studies. This is so much so that every planning activity is directly or indirectly linked to land. This study examined the land use dynamics of Orominieke layout, Port-Harcourt with a view to x-raying, if the present land use pattern complies with the provisions of prepared development plan of the area. The study utilized the 1975 Master plan; landsat and Google Earth imageries of the study for 2000 and 2018 at 30m spatial resolution and were analyzed using ArcGIS 10.2. The result of our analysis shows that there are serious distortions and deviation in the land use budgeting in the area. Overall, Orominieke is characterized by constant changes in landuse and conversion of areas reserved as open space to industrial, residential and commercial use due mainly to the increase in the tempo of socio-economic and political activities in the area. In aggregate terms, about 71.88 hectares of land in the area have been taken over by commerce in 2018 compared to 15.62 hectares proposed for same use in the 1975 development plan. Also important here is the rapid increase in land devoted to government and institutional use which at 2018 stands at 57.48hactares compared to15.62 hectares in the 1975. The constant changes in land use pattern of the area may be connected to the rapid population growth that characterizes this area of Port Harcourt and also a response to rapid economic growth and market forces. Increase in land value in the area is also a contributory factor that precipitates illegal conversion of land from one use to the other with attendant negative consequences. Activating and enforcing relevant

development control legislation and regulations is a desideratum in ensuring a coordinated urban growth in the area. Regular field visits or site inspections are necessary to ensure that development complies with stipulated guidelines for urban development planning in the area.

Key words: development control; land use, planning; land use change; urban growth

I. INTRODUCTION

Although Nigeria has a rich and diverse urban history taken from across its geographic regions and dating back to pre-colonial era, colonial rule played major role in re-defining urbanization in most third world countries, (Mabogunje, 1968). With the enactment of the township Ordinance of 1917, Port Harcourt was classified as a second class town and later upgraded to a first-class in 1948 (Owei, 2000). It was this classification that paved way for the provision and allocation of municipal responsibilities base on their respective capabilities and the introduction of some development control measures to guide its growth.

On attaining self rule in Nigeria and the discovery of oil in the late seventies, Port Harcourt witnessed a phenomenal growth. The expansion in economic activities was accompanied by increased rural-urban migration resulting to the rapid growth of the city. Arising from this, it became obvious that the planning scheme approach of the pre-war era was not adequate to respond to the dynamics of population growth and spatial expansion of Port Harcourt. One of the responses made to address this sudden growth was to institute some form of planning initiative, first to designate the headquarters of the administrative divisions of the

state as urban centres, and then secondly, to prepare master plans to guide their development (Owei, 2017). In 1975 the Port Harcourt Master Plan was prepared by Swedish consultants, Specialists Konsult. In a bid to manage the growth of Oromenieke, led to its incorporation into the Port Harcourt Master plan of 1975. How has the development of Oromenieke kept pace with the provisions of the prepared plan? This study is an attempt to examine the land use changes of the study area over time vis-à-vis the implementation of the prepared development plan of Oromenieke.

II. STUDY AREA

Port Harcourt the capital city of Rivers State, also called Nigerian Garden City, lies along the Bonny River and is situated in the Niger Delta Region. Port Harcourt was established on the very edge of the West African swamp in 1912 by the British Colonial organization of Nigeria next to the farmlands called Obomotu, close to the bluffs of Igwuocha of the Diobu Ikwerre town. The Port Harcourt city covers a territory of 180,000 hectares. Physically the spread has happened in both a south – easterly course and a northerly heading. Toward the south, development was through marshland colonization in squatter settlements privately called "waterfronts".

Development has likewise happened in a north – westerly and northerly – easterly bearing through the ensnarement of indigenous enclaves of semi – rustic and provincial group inside the developed range of the city. The southern segment is obliged by the waterway. The Port Harcourt urban periphery today extends to Choba, Rumuokoro, Elelewon Rukpoku and Woji. A lot of this development is impromptu and unregulated (Owei and Ikpoki, 2006).

The development of Port Harcourt is attached to the social and economic history of

Nigeria taking after the development of a seaport, railroad and rail route end in 1927. Nonetheless, as of late, the development can be followed by the time of the production of the south Eastern States. This period saw an awesome increment in the plan of the origin, for example, the development of new streets, the expansion of power supply and also the foundation of some administrative services like the zonal services of training, wellbeing, land and lodging and so on. It was additionally connected up specifically with different parts of the states and this has realized the expansion in populace and volume of exchange. A considerable lot of these zones have ended up inundated into the city's neighborhood framework as the towns have lost their uniqueness.

Rivers State is one of the 36 States of Nigeria. Its capital, Port Harcourt is one of the biggest cities and is financially viable as the focal point of Nigeria's oil industry. The study area, Oromenieke was designed as a medium income residential area. It has a moderately level geography of around 3.3m above sea level. It is blessed with oil and gas resources, the presence of these resources are all contributory to the rapid growth of the area but not without some consequences one of which is uncoordinated growth.

The growth of Oromenieke in both absolute and relative terms has been accompanied by the expansion of existing built-up areas and the emergence of new and identifiably 'urban' settlements. The choice of Oromenieke was due to the fact that the area is one of the 19 neighbourhoods whose development was captured in the Master Plan prepared in 1975, by Specialists Konsult, a Swedish planning firm. Figure 1 is a schema showing the study area.

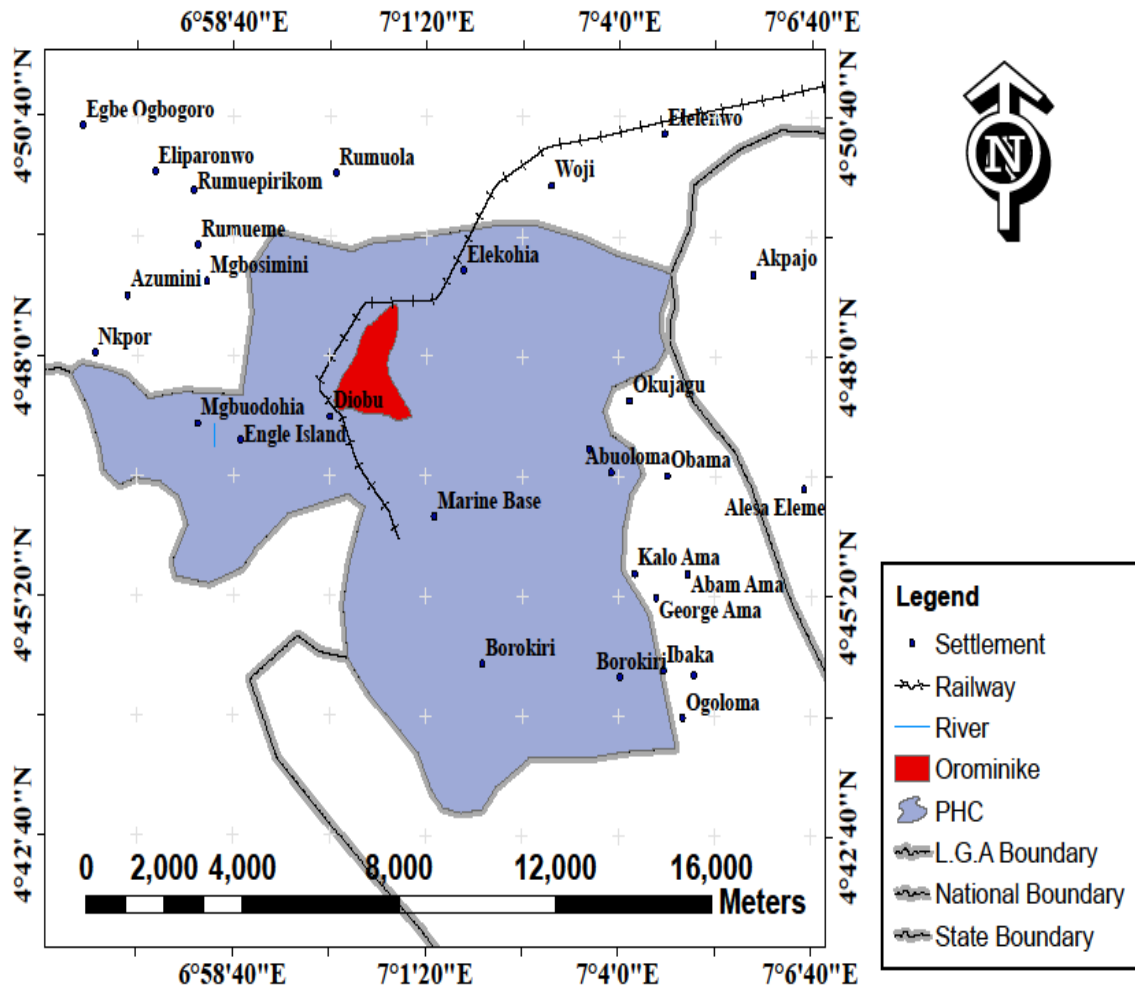


Fig. 1: Port Harcourt Municipality showing the Study Area
 (Source: adapted from Port Harcourt Master Plan 1975)

III. METHODOLOGY

The study adopted the longitudinal research design. This research design was preferred since the study intends to x-ray the pattern of land use changes (1975-2018) in the study area over time. The study was carried out in-situ at one point in time. Both primary and secondary sources of data were used. The primary data was through direct observation and ground trotting and updating of existing land uses in the study area. In addition, building enumeration and assessment were carried out within the study areas, and the information was used to develop the present land use pattern of the study area.

The secondary sources of data relied on the use of the 1975 Orominieke Master Plan, the landSat and Google Earth imageries of the area for 2005 and 2018 at 30m spatial resolution. The use of Google Earth imageries was necessitated by the need to gain better spatial resolution and identify

buildings and other urban features. Data from the satellite imageries were analyzed using ArcGIS 10.2. To enhance understanding and appreciation of the results of this work, maps were used to show the different land use changes at the different time period.

IV. REVIEW OF PREVIOUS STUDIES

One of the features of world's development today is rapid urban growth characterized by spatial expansion of existing settlements into urban fringes. This physical expansion of urban areas also brings with it far reaching changes in the structure of cities. Rapid urbanization fuelled by rapid rural-urban migration appears to be one of the characteristics of cities in the developing nations of the world. Given uncontrolled migration, cities are tasked to absorb more population beyond their capacity which in turn leads to spatial expansion, changes in

their appearance and the emergence of new districts especially at the urban fringes.

Bloch, et.al.(2015) while attributing city expansion in Nigeria to population growth and population density, concluded that “overall, the physical expansion of built-up areas is expected to continue in the coming decades, although there is considerable uncertainty about how much expansion will take place”. These scholars are also in agreement that while rural-urban migration is probably not the main contributor to overall urban population growth in Nigeria, it nevertheless continues to play an important role in urbanization.

A review of pre-colonial cities in Nigerian, shows that the physical structure of cities at this epoch was historically been shaped by trade and politics as seen in the urban structure which tends to flow from the Oba’s or Emir’s palace in the pre-colonial north and western Nigeria.

The post independence Nigeria witnessed the emergence of new cities that played administrative functions and government service centres, as well as new institutions such as hospitals and post-secondary educational facilities. This diversification of functions and activities undoubtedly left a mark on the urban form and structure. (Bloch, et.al. 2015)

Alfasi et al. (2012) utilized remote detecting and GIS-based plan implementation evaluation to test the effect of thorough diagram for Israel’s Central District. The outcomes indicate major crevices between the first land utilize assignments of the area arrange and real advancement. Albeit the majority of the reviews clarify execution, less consideration is given to the components that influence arranges usage.

Laurian et al. (2004) concentrated the variables influencing arrangement execution and explore the determinants of plan usage by utilizing PIE philosophy. By distinguishing a few key components, they lead the exploration on the designers and nearby specialists in view of the licenses in doing arrangement usage. Berke et al. (2006) distinguished the impacts of the execution practices of arranging organizations and the limit of offices and allow candidate to achieve achievement. Again Berke and Godschalk (2009) rehash their examination yet centering in another perspective that was in creating a decent nature of the arrangement as a figure deciding as a fruitful arrangement usage which just implies that the nature of an arrangement decides its usage status. Sabatier, (2013) examined the relationship between plan preparation and execution of urban communities in America and discovered that the earliest plans complied with the development practice in existence. The extent to which present development of Orominieke area complies with the provisions in the prepared plan is the concern of the subsequent sections of this work.

V. RESULTS AND DISCUSSION

Table 1 is the land use budget analysis of Orominieke area according to the 1975 Port Harcourt master plan. The breakdown indicates that 71% of the total land area was devoted for residential Land use , 11.57% Institutional and Government land utilizes and 8.2% shopping and business Land utilizes while there was no land apportioned to Open Space and green belt reservation by the Port Harcourt Master Plan 1975.

Table 1: Land Use Budget for Orominieke Layout Port Harcourt

Attributes	Area (Hectare)	%
Residential	135	71.0
Industrial	27.93	14.7
Open Space & Green Belt Reservation	-	-
Institutional & Government Uses	11.57	6.1
Shopping and Business Uses	15.62	8.2
Total	190.12	100

(Source: Master Plan of Port Harcourt 1975)

Port Harcourt Master Plan of 1975 designated this Orominieke as mixed housing area; the area was bisected by the railway for which a widening reservation was proposed, classified as medium density area. This zone includes the St. John’s TTC complex which was studied in the social survey and around which new private residential estate was developed. It had a net

residential area of 97 hectares the quality of the residential environment intern of public facilities and utilities and condition of the street surface, makes it one of the worst areas in Port Harcourt. Land adjoining the railway should be reserved free of development to allow for possible doubling of the track.

The land was also reserved for a possible extension of the railway to the northwest. The master plan also made provision for an additional secondary school and primary school, a site was also, reserved for the establishment of a small local centre, and the land was set aside for a new broadcasting and telecommunications center. The

Port Harcourt Master Plan of 1975 also recommended the relocation of industries which produce undesirable effects for local residents, as a result of their operations, while recommending the area as suitable for light industrial or service sector uses. (see Fig 2).

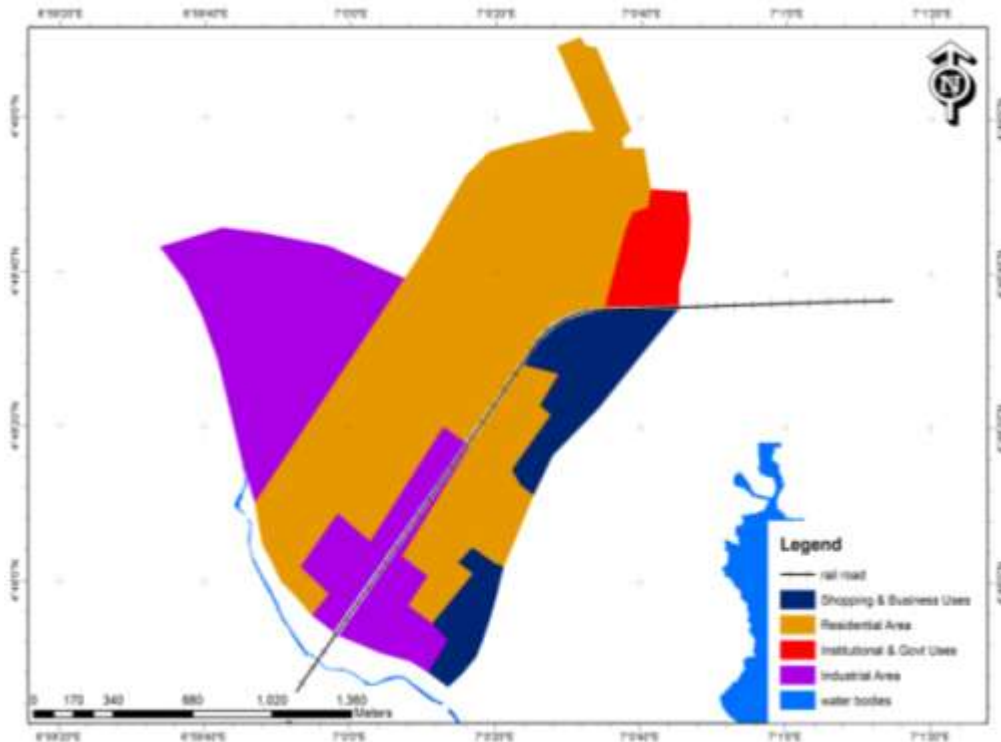


Fig. 2: Land Use Plan of Orominieke Layout Port Harcourt 1975

Source: Port Harcourt Master Plan,1975

Table 2 present the land use Situation of Orominieke Layout in Port Harcourt as adapted from the Google earth imagery in 2005. From the table there were about 260.62 hectares of residential land use in Orominieke Layout in 2005 as against 135 hectares of residential Land use in the 1975 plan. Open Space & green belt reservation land uses was about 7.32 hectares in 2005, while the Port Harcourt Master Plan of 1975 made no provision for Open Space & green belt reservation.

Institutional and Government land uses were 42.33 hectares in 2005 as against 11.57 hectares, in 1975 while land use for Shopping and business use was 16.83 hectares in 2005 as against 15.62 hectares in 1975 respectively. The total area of land proposed by the master plan of Port Harcourt for Orominieke Layout 1975 was 190.12 hectares while as at 2005 the area increased to 329.84 hectares, having an extra 139.72 hectares unplanned.

Table 2. Condition of Land Use for Orominieke Layout Port Harcourt 2005

Land Use	Area (Hectare)	%
Residential	260.62	79.01
Industrial	2.74	0.83
Open Space & Green Belt Reservation	7.32	2.22
Institutional & Government Uses	42.33	12.83
Shopping and Business Uses	16.83	5.10
Total	329.84	100

(Source: Adapted from the Google earth image)

Figure 3 highlights the land use pattern of Orominieke Layout Port Harcourt as adapted from the Google earth imagery, and verified through physical identification of existing structures with the use of Global Positioning System (GPS). Evidence from the work shows that Orominieke Layout had about 260.62 hectares of residential land use in 2005 as against 135 hectares of residential land use as proposed by the Master Plan of Port Harcourt 1975. Open Space & green belt reservation land uses was about 7.32 hectares in 2005, while there was no provision of Open Space & green belt reservation in the Master Plan of Port

Harcourt 1975. Institutional and Government land uses was 42.33 hectares in 2005 as against 11.57 hectares proposed for by the Port Harcourt Master Plan 1975, while land use for Shopping and business uses were 16.83 hectares in 2005 as against 15.62 hectares in 1975 respectively. The analysis shows that there were serious distortions and deviation from the proposal of the master plan, especially on land for industrial uses, which were totally converted to residential uses, also, series of land use conversion from residential to commercial and institutional uses among others (see Fig. 3).

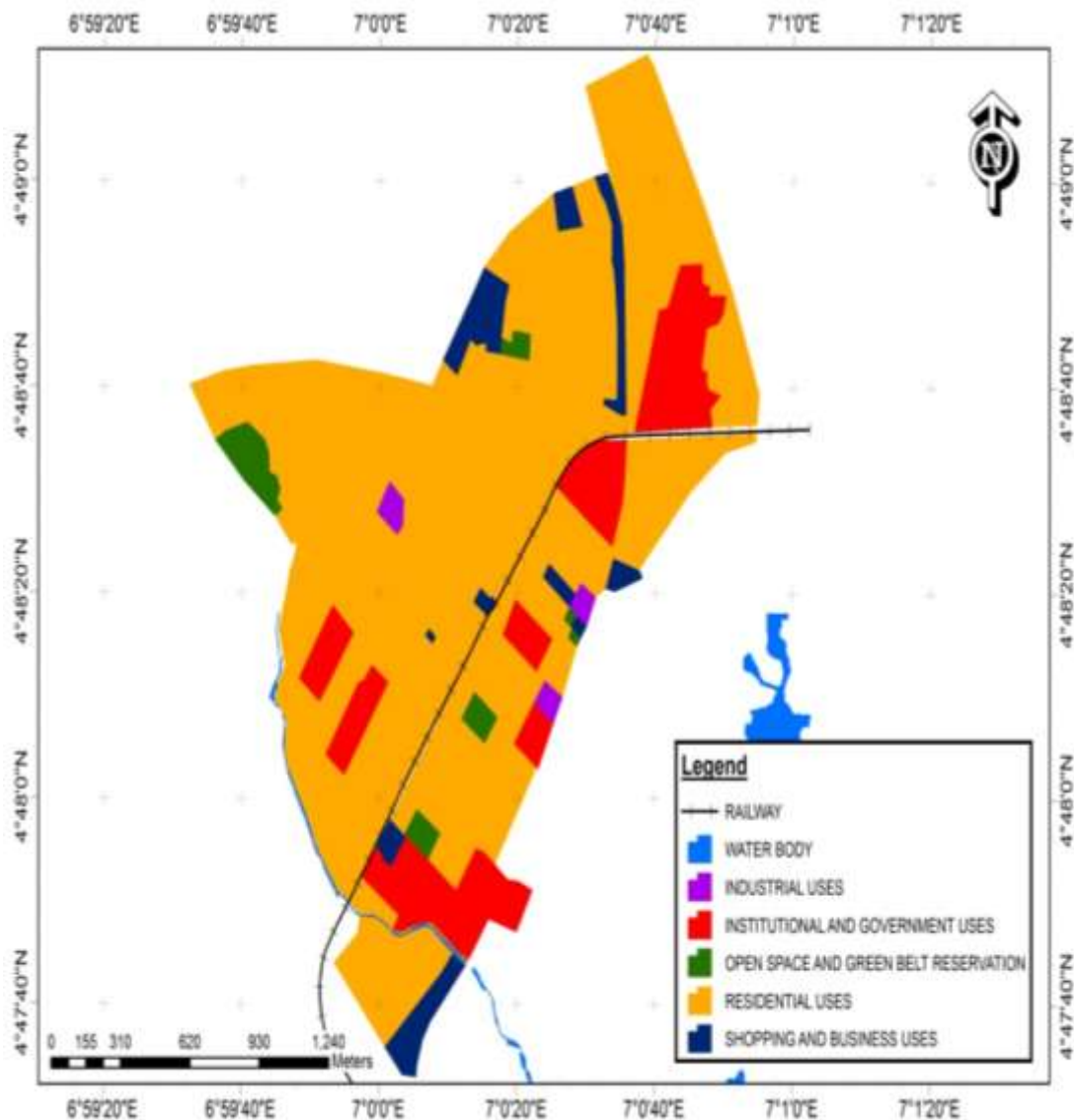


Fig. 3: State of the Land Use of Orominieke Layout Port Harcourt 2005

(Source: Adapted from the Google earth image)

Table 3 reveal the Present land use pattern of Orominieke Layout Port Harcourt in 2018, compared to the proposal of the Port Harcourt Master Plan of 1975 for Orominieke Layout. There were about 196.24 hectares of residential Land use for both mix uses Residential and Residential only

in Orominieke Layout Port Harcourt 2018, Open Space & green belt reservation land uses had about 8.58 hectares, Institutional and Government land uses had 57.48 hectares, land use for Shopping and business uses had 71.88, while Industrial land uses had 1.94 hectares respectively (see Fig. 4).

Table 3: Present Land Use Budget for Orominieke Layout Port Harcourt 2018

Attributes	Area (Hectare)	%
Residential	24.81	6.78
Residential Mix	171.43	46.82
Industrial	1.94	0.53
Open Space & Green Belt Reservation	8.58	2.34
Institutional & Government Uses	57.48	15.70
Shopping and Business Uses	71.88	19.63
Total	366.12	100

Source: Google earth image and ground trotting of the study neighbourhood. (Researcher’s field work 2018)

Figure. 4 Shows the existing situation and land use type in Orominieke Layout Port Harcourt in 2018. An inset of the ground trotting carried out for 2018 shows that around 196.24 hectares of residential land development deviates from the 1975 Port Harcourt Master Plan for the Study area which was 135 hectares. Also was serious deviation for areas designated as Open Space and green belt reservation which recorded 8.58 hectares as at 2018 while the Port Harcourt Master Plan 1975 did not make provision for this purpose. Deviation was also noticed on land use for Institutional and

Government uses which in 2018 stands at 57.48 hectares as against 11.57 hectares proposed by the Port Harcourt Master Plan 1975. Same applied to shopping and business uses which recorded 71.88 hectares as against 15.62 hectares proposed by the Port Harcourt Master Plan 1975. Among all deviation cases, unplanned urban land use area were 176 hectares, which was deduced to be an encroachment to part of the land reserved as the buffer for the Ntawogba stream that cut across the study area.

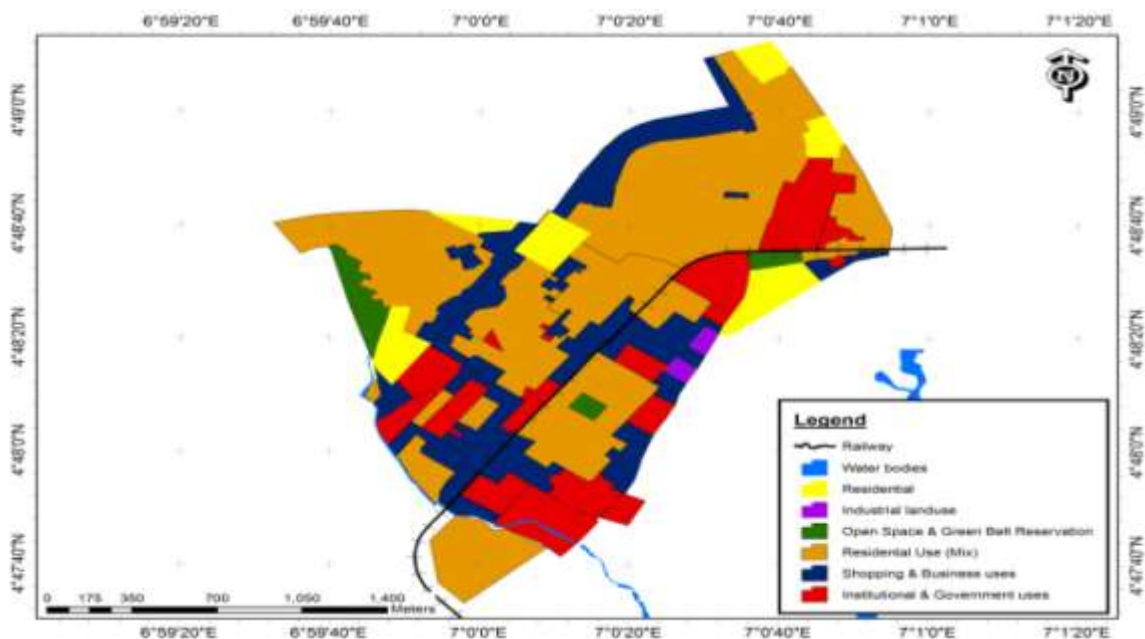


Fig. 4: Present Land Use of Orominieke Layout Port Harcourt 2018

(Source: Adapted from the Google earth image and Ground trotting of the study neighbourhood)

A comparative evaluation of changes in land use in the area shows that Orominieke has witnessed changes in its land use characteristics within the period under study. Table 4 highlights the land use changes of the area for the different time periods (1975,2005,2018). For example, residential land use occupied 135 hectares, in 1975, and increased to 260.62 hectares in 2005 with a total deviation of 125.62 hectares. However in 2018 the amount of land devoted to residential land uses reduced to 196.24 hectares most of which were illegal conversion of residential land.

Also, on the assessment of open space/greenbelt reservation, the master plan made no provision for such land use in this neighbourhood, while in 2005 land use for open space/greenbelt reservation grabbed 7.32 hectares and further increased to 8.58 hectares in 2018. On the land use for institutional & government uses, the study noted a regular increment against the proposal by the master plan in this regard in 1975 which were 11.57 hectares, in 2005, it recorded 42.33 hectares given a

deviation of about 30.76 hectares in 2005, and further grabbed additional 15.15 hectares by 2018 making it a total of 57.48 hectares in 2018. This shows that there were high demand for Institutional and Government land use in this neighbourhood, which now results to change of use respectively.

Industrial land use, the Port Harcourt Master plan 1975 proposed 27.93 hectares for light industrial land uses, while by 2005 the light industrial land use declined to 2.74 hectares, and further decreased to 1.94 hectares by 2018, recording a total of 25.99 hectares deviations from the Master Plan of Port Harcourt 1975. The area proposed for shopping and business uses the master plan were 15.62 hectares, while in 2005 the land use recorded 16.83 hectares, having a deviation of about 1.21 hectares, The result of the ground trutting proves that there were increase of about 71.88 hectares of land use for shopping and business in 2018, when matched up to the proposed area for shopping and business uses in the master plan of Port Harcourt in 1975, a total of 56.26 hectares were observed as deviation. (see Fig 5).

Table 4: A comparison of the Land use Budgets for Orominieke Layout Port Harcourt 1975,2005 and 2018.

Land Use	Area (Hectare) 1975	Area (Hectare) 2005	Area (Hectare) 2018	% 1975	% 2005	% 2018
Residential	135	260.62	196.24	71.0	79.01	58.38
Industrial	27.93	2.74	1.94	14.7	0.83	0.58
Open Space & Green Belt Reservation	-	7.32	8.58	-	2.22	2.55
Institutional & Government Uses	11.57	42.33	57.48	6.1	12.83	17.10
Shopping and Business Uses	15.62	16.83	71.88	8.2	5.10	21.39
Total	190.12	329.84	336.12	100	100	100

(Source: Adapted from Port Harcourt Master Plan 1975; Google earth image 2005 and,2018)

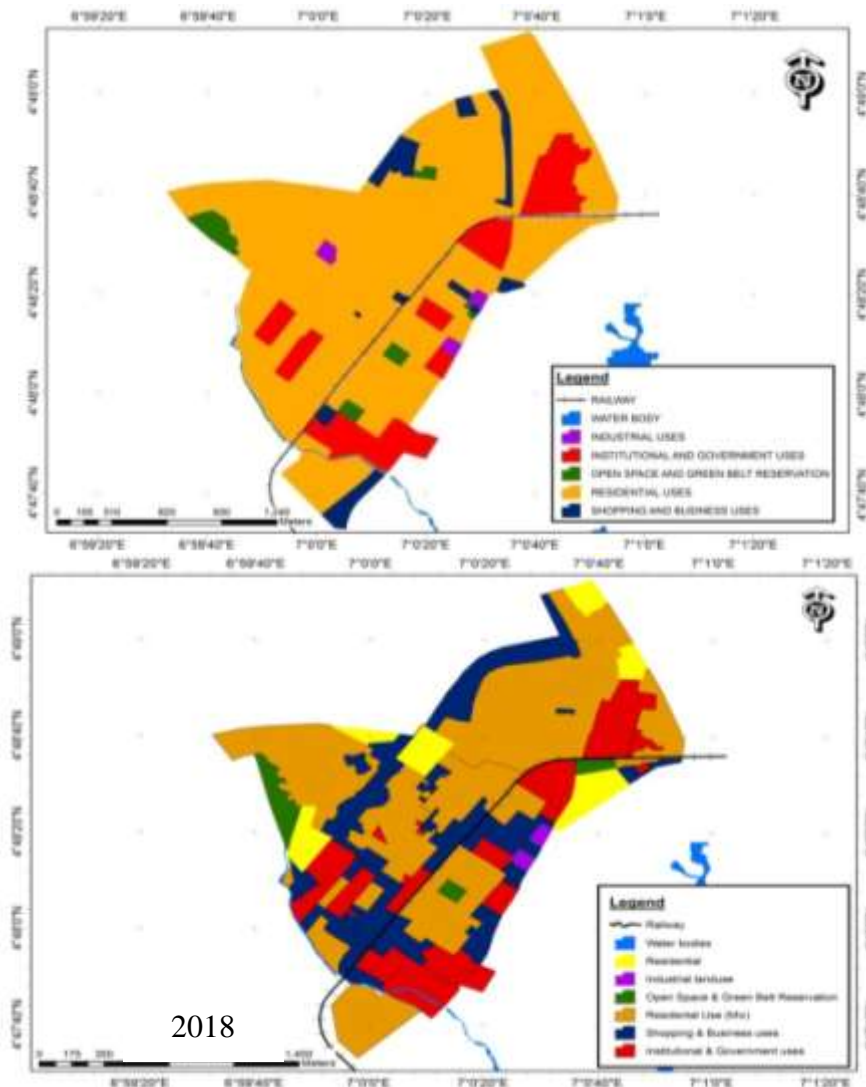


Fig. 5: Comparison of the Land Uses in Orominieke Layout Port Harcourt 1975, 2005 & 2018
 (Source: Adapted from the Google earth image and Ground trotting of the study neighbourhood.)

VI. CONCLUSION

This work x-rayed the changing pattern of land use in Orominieke area of Port Harcourt with a view to examining the level of compliance with the laid down development plan prepared for it. The results of this work points to the fact that there are serious distortions in the land use pattern of the area for the years 2005 and 2018 when compared with provisions in the 1975 development plan of the area.

The constant changes in land use pattern of the area may be connected to the rapid population growth that characterizes this area of Port Harcourt

and also a response to economic growth and market forces. Increase in land value in the area is also a contributory factor that precipitates illegal conversion of land from one use to the other with attendant negative consequences. Activating and enforcing of relevant development control legislation and regulations is only but a desideratum in ensuring a coordinated urban growth in the area. Regular field visits or site inspections are necessary to ensure that development complies with stipulated guidelines for urban development planning in the area.

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