A Study of Infrastructure and Utilities on Residential Estate Development in Ikorodu, Lagos, Nigeria

Hassan, Yakubu O.[1]; Awotungase Abayomi S.[2]; Olaitan, Peter A.[3]; Adewunmi, Olamilekan[3]; Talabi, Ibukun J.[4]

[1]*Post Graduate Student, Department Urban and Regional Planning, University of Lagos, Akoka, Nigeria*
[2]*Lecturer, Department Architecture Technology, Lagos State Polytechnic, Ikorodu, Nigeria*
[3]*Lecturer, Department Urban and Regional Planning, Lagos State Polytechnic, Ikorodu, Nigeria*
[4]*Lecturer, Department Architecture Technology, Lagos State Polytechnic, Ikorodu, Nigeria*

***Abstract*: - The study characterize residential estate development Ikorodu, Lagos, Nigeria, a case study of Ayangburen Jubilee Estate; it review the development policy framework in the study area; examining the implication of high density residential development on infrastructure provision in the study area, and explore appropriate planning interventions for a sustainable housing utilities and infrastructure with the corresponding development in the study area. Having analyzed the current state and possible future scenarios, this study identified population and development control, physical infrastructure upgrade, Sustainable designs, policy review, Green infrastructure integration and public participation as possible intervention and recommendations to help halt and reverse the negative changes in the study area.**

Keywords: **Infrastructure, Utilities, Residential, Estate Development, Ikorodu, Lagos**

I. INTRODUCTION

Infrastructure and utilities encompasses extensive collection of services and facilities which include water, road, waste disposal, drainage, communication, primary health services, schools and housing(Kiri, 2015). Appropriate provision and effective management of this public infrastructures (Ayoola, Kemiki, Adeniran, & Abdulkareem, 2017). It enhanced productive and profitable land uses in an urban area. The use of these infrastructural facilities compete less with productive uses through better rent offers. Neighborhoods have been the focus of attention of city planners, architects, and urban designers for a long time. It is a powerful idea and has occupied a well-entrenched place in the minds of both the theoreticians and of practitioners for many years. Yet a close analysis of its meaning reveals an extremely elusive concept whose substantive characteristics ebb and flow over time.

The meanings attached to the idea are continually being disassembled, shuffled, and reassembled according to the circumstances. It often seen as solutions to urban social problems, stemming from the deterioration of local community ties, which are assumed to have been based in preindustrial cities on frequent face-to-face encounters. Along with these suppositions, the development of the neighborhood can be seen as a continuous search for the appropriate measure of the urban system. This scale, in accordance with the modernist aspiration to realize social goals by using architectural and planning means, tends to be based primarily on social parameters (Khalid, 2008). However, it also conforms with specific and practical requirements in the design of residential districts, related both to development procedures and to particular life-styles.

The term neighborhood is often used to describe the sub-divisions of urban or rural settlements. In its purest definition, a neighborhood is the vicinity in which people live. Lewis Mumford presented 'neighborhood' as a 'fact of nature', which comes into existence whenever a group of people share a place. Since the early ages of humanity, for practical, economical, sociological and psychological reasons, people have tended to live close together in sections of an area and form communities. Those sections or neighborhoods have some particular physical or social characteristics that distinguish them from the rest of the settlement. The clustering of these neighborhoods has formed towns, villages, and cities.

The neighborhood as a unit is a ubiquitous phenomenon in every urban and nonurban area. Arnold (Bhatta, 2010), describes neighborhood unit as an integrated, and planned urban area related to the larger community of which it is a part, and consisting of residential districts, a school or schools, shopping facilities, religious buildings, open spaces, and perhaps a degree of service industry. In light of this, there are two broad components of human settlements, these are the physical and services components(Ahmed & Dinye, 2011). The physical components includes shelter and infrastructure/facilities while the services components are community services such as education, health, culture, welfare, recreation and nutrition to which the physical elements provide support ((CNN, 2008).

In Nigerian urban centres, basic infrastructure and utilities has suffered major neglect over a longperiod of time in the hands of government and its agencies that are expected to provide and maintain the infrastructure (Royuela, 2013). Availability of infrastructure is often one of the factors affecting the demand and choice of residential property as man is a socio-economic being seeking to dwell in residential units that provides maximum supply of necessary facilities at affordable costs. Provision of facilities that would enhance the living condition of residents within a neighbourhood is therefore very essential. Rental values of properties also vary from

place to place depending on various factors among which availability of facilities stand prominent. Most often, when factors affecting rental values of residential properties are considered, the most commonly discussed factors are location, quality of building, demand and supply rate among others are the most commonly mentioned with little or no regard for the availability of public facilities and infrastructures.

Therefore, in order to elude the negative impacts of infrastructure in residential neighbourhood, thorough planning and appropriate density control are essential. Infrastructure such as roads, drainage and sewerage, electricity, telecommunication networks and so on are substantial in supporting urban development(Asoka, Thuo, & M., 2013). These infrastructural services, however, are very costly to provide and maintain; and in many cases, the local government or private developers were unable to provide sufficient infrastructure and maintain them causing a havoc on residential neighbourhoods. The infrastructure services in most of these tenements are constrained, either as a result of collapse building infrastructure, or inefficacies of the surface providers. High people density lead to overload of the systems and deteriorate these services. In order to achieve the former outcome, it is important that the planning of high density and the provision of infrastructure go hand in hand.

It is clear that the current trend is deficient in addressing issues of carrying capacity, optimum land utilization, vulnerability to climate change, inclusiveness in urban housing and the undue strain on existing infrastructure beyond the allowable loading. The rising trend in residential housing density in pipeline has several planning implications that need to be investigated. The several challenges profound in these area include low infrastructure and service capacity, missing community, social and commercial facilities and traffic congestion are among the indicators that sustainability of the densification process need to be investigated.

Though studies have been undertaken to investigate factors contributing to the high and unregulated housing density, there exist a gap with regard to analysis of the impacts of increasing density on infrastructure, and the potential strategies that can be advanced to enhance its sustainability. The resultant developments in terms of unplanned high density residential developments has a direct implication to inadequate infrastructure, traffic congestions, and polluted environments and are clear indicators of the deficiencies of our development control and planning frameworks to guide urban development in tandem with rate of urbanization. However, estates in Ikorodu North Local Council Development Area is currently full of high and uncontrolled developments densities which have caused constraints on the necessary amenities. Despite the many problems associated with unplanned density of development, the trend has continued to be witnessed. This study seeks to establish the implications of unplanned high density development to infrastructure services and utilities within the studies area.

II. METHODOLOGY

The study involve conducting key informant interviews were administered on people who are particularly knowledgeable about the socio-economic and environmental issues in the selected estates in area.The sampling frame for this study consisted of only who resident found during the collection of data within the study area. For this study based on the reconnaissance survey 100 respondents' was purposively selected across the estate to collect data (this was based on the information giving by the estate chairman that averagely of 100 resident attend C.D.A meeting and that the only day is to come within the monthly meeting period). The questionnaire was coded and then the data keyed in into the SPSS and Ms-Excel computerized templates for analysis out of which several tables was produced by tallying and cross-tabulation then subjected to descriptive statistics, frequency and percentages for analysis.

III. FINDINGS

The study found out that Ayangburen Jubilee estate has experienced rapid densification over the past years. The area which at independence was an exclusive residential zone characterized by little or no-informal dwelling units has changed rapidly over the last few years with noticeable change to a high density residential neighborhood characterized by unguided construction of shop and residential flats. The current housing development trend is therefore mainly vertical in nature though there are some that take horizontal character of some industrial plots. The study found out that the affordable housing, close proximity to Industrial area, accessibility to major Road networks (Sagumu-Ikorodu road and Ikorodu-Ijebu –Ode road) are the main factors contributing to people migrating to Ayaangburen Jubilee residents estate and they are in the middle age group of between 35- 45 years with at least a graduate certificate. This means the residents have sufficient knowledge about planning and environmental matters affecting them.

Further, the study found that most residents have young families with children who are aged between 0-5 years of age. Adequate provision of schools, recreation areas and children play areas is therefore an important priority for the study area. Additional, the study found out that the high housing density has significant physical and ecological impacts. These include; traffic congestion, land use conflicts, insufficient community facilities, encroachment on high tension reserves, pollution, and increased storm water generation (impervious surfaces), Poor sewerage system.

The existing infrastructure, sewer system and community facilities cannot accommodate the high population density which was currently experienced in the estate.

The study also endeavored to investigate the extent to which the high density development have impacted the green spaces and strategies can be used to mitigate negative impacts of densification process. Strategies aimed at enhancing air purity,

protection of green spaces, use of green infrastructure and construction materials and sustainable liquid waste management should be used to sustain high density development.

There is lack of sufficient legal, financial and human capacity to enforce the necessary green designs and strategies. The few existing open ground spaces are private plots yet to be developed which will leave the area no green space and play areas. This means the Ground Coverage ratio fails to protect the fragile green spaces or minimize excess (impervious) paving. Encroachment on road and high tension reserves is evident from the study findings, as well as flooding on access roads due to lack of effective storm water control strategies.

The lack of a well-planned sewer system in the neighborhood to discharge the sewage in the main track are among the major cause of the open sewer drains leading environmental pollution and disease vulnerability. The study further found that there are no requirements for developers to use green infrastructure (Green Eco roofs, green walls, street greening) to replace the ever developing green open grounds. The study found that regulatory mechanism minimize the reliance on private motor vehicles. Traffic congestion and on street parking is therefore experienced particularly in rush hours causing a lot of conflicts between the motorist, pedestrians and the informal traders along the major streets. The study further found out that, the current zoning and planning regulations in the study area are not implement and sufficient to safeguard against the negative impacts of development in the area. This is due to the fact that sufficient integration of policies and guidelines for green designs within the development control framework doesn't exist.

Lastly, the high density development in Jubilee, Ikorodu has a positive implication of increasing housing stock in the area. From the study, the only critic from the residents is the lack of commensurate upgrade in supporting infrastructure and planning strategies to compensate the ever reducing green space in the neighborhood to improve livability. However, there is an expressed need to integrate green strategies to reduce the negative impacts of these development in the study area.

IV. RECOMMENDATION

The Impacts and Planning Implications were derived from the research's literature review, background study and study findings from the field work. The impacts mainly related to the study included; the high population in-migration due to cheap housing has resulted to deterioration of livability in pipeline, leading to poor service delivery, inadequate capacity of existing infrastructure among other vices; increased demand for housing has resulted to the decrease in open and green ground spaces in number and size. The developers build their flats from beacon to beacon with no adherence to the plot coverage standard to maximize the number of housing units per plot; and that site is not served with an effective sewerage system to discharge the sewage from the households which has resulted to high use of septic tanks which burst from time to time leading to open sewer drains compromising the environmental standards on the site; the few households connected to private sewer line are not effective and they burst often since they do not have an efficient outlet to the main sewer.

V. CONCLUSION

This study sought to appraised access to neighborhood infrastructure and utilities. To achieve this, the study pursued the general objectives to determine the extent and nature infrastructure and utilities in the study area and examine the related impacts of this on development. The study pursued the argument that the current provision of infrastructure in the study area is not sustainable based on the fact that infrastructure provision in the study area is inadequate, deplorable and requires alternative low impact strategies. The result of the findings indeed show that the negative effects of population increase in residential development in the study area on infrastructure out-weigh the benefits.

Issues such as pollution. Traffic conflicts and congestion, impassable access roads, poor state of sewage disposal, increased substandard developments, extinction of green and open ground spaces among others mentioned in this document; necessitate the re-development of a neighborhood plan. This should not only be applicable in Ayangburen Jubilee Estate only; but in the long run should be prepared for the different uniform neighborhood all through the Ikorodu among are Low Cost Housing estate, Jakande estate, Tinubu estate etc. and Lagos megacity at large. It should be noted that the results of the study were based on secondary data; interview and the field work data collection from representative population through household questionnaires, observation, and tape measurements on the site.

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Appendix

Chart 2: Respondents' Year of Staying in the Study Area

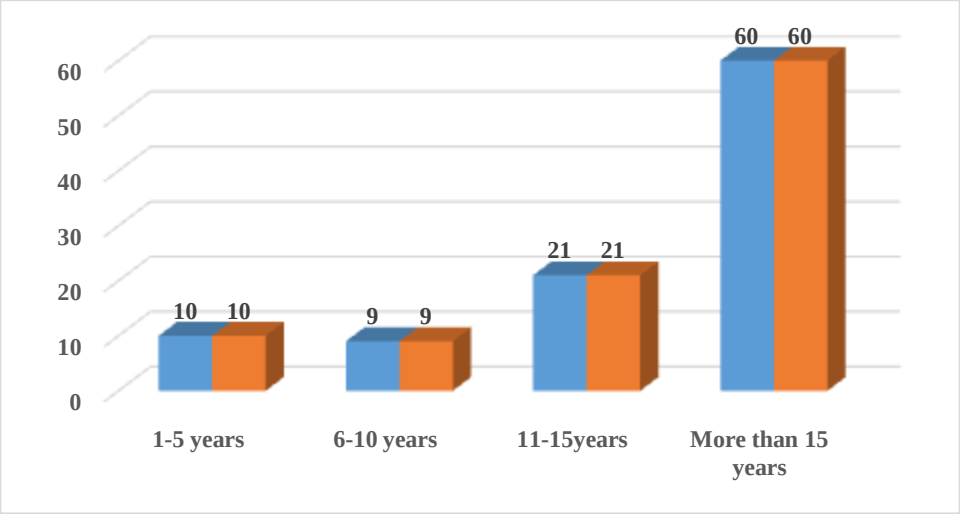


Chart 1: No of Household Members

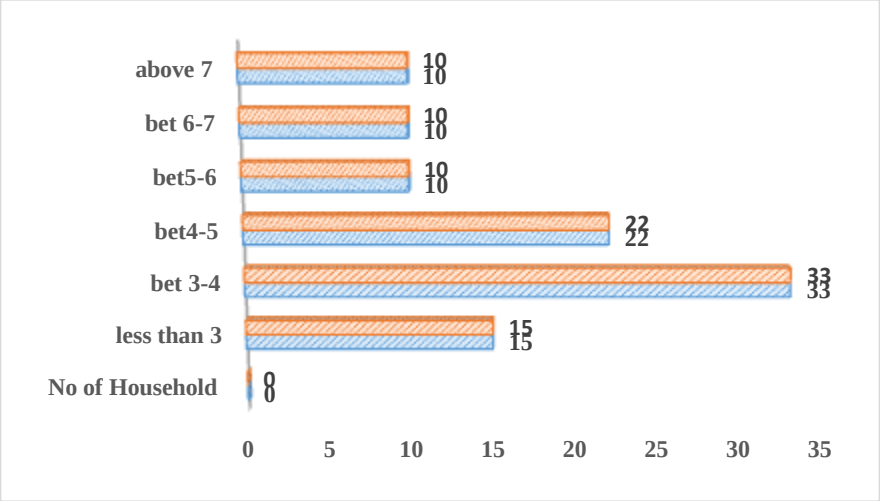


Chart 3: Purpose of Migrating into the Estate

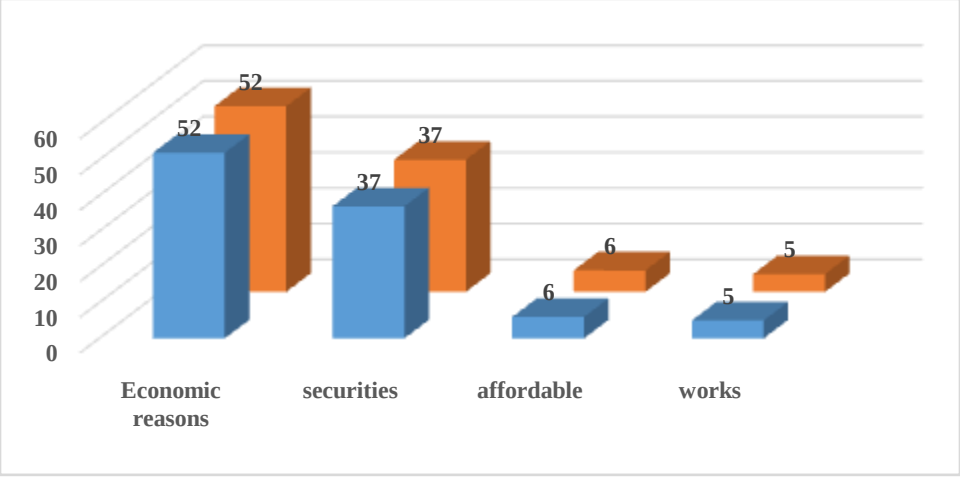


Chart 4: Respondents' Plot Ownership

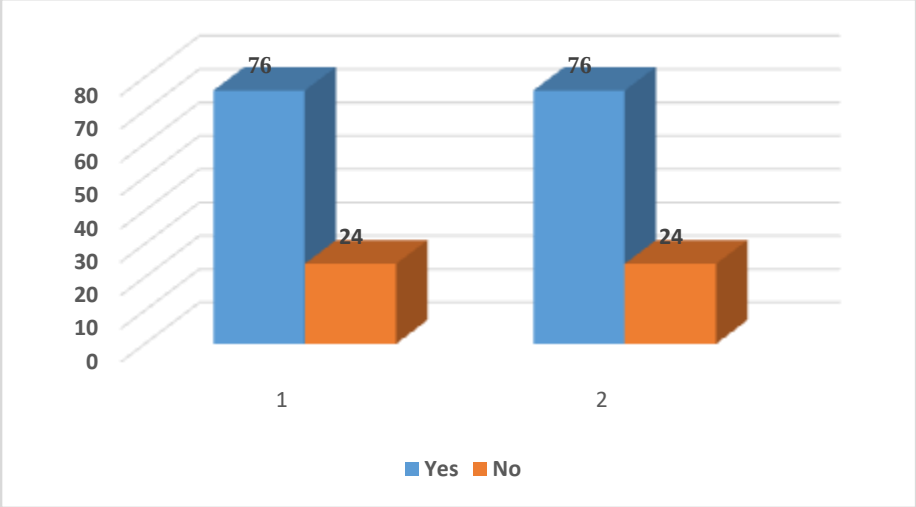
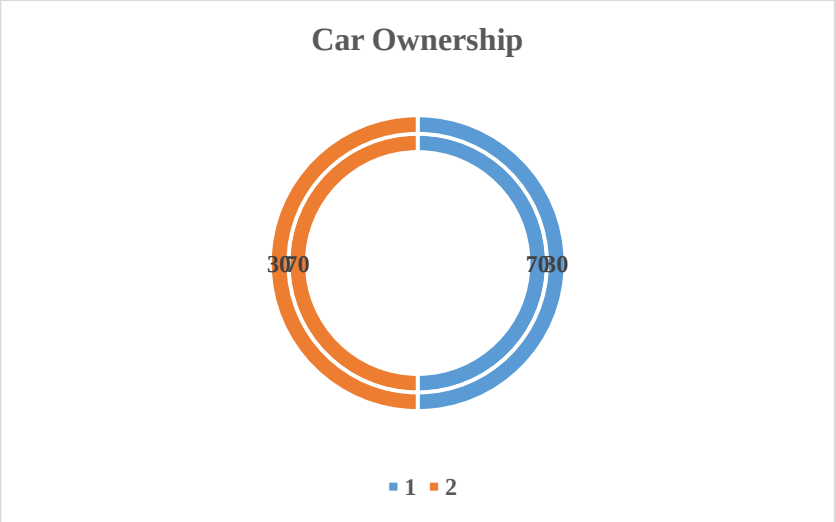


Chart 5: Showing Car Ownership and Number of Cars



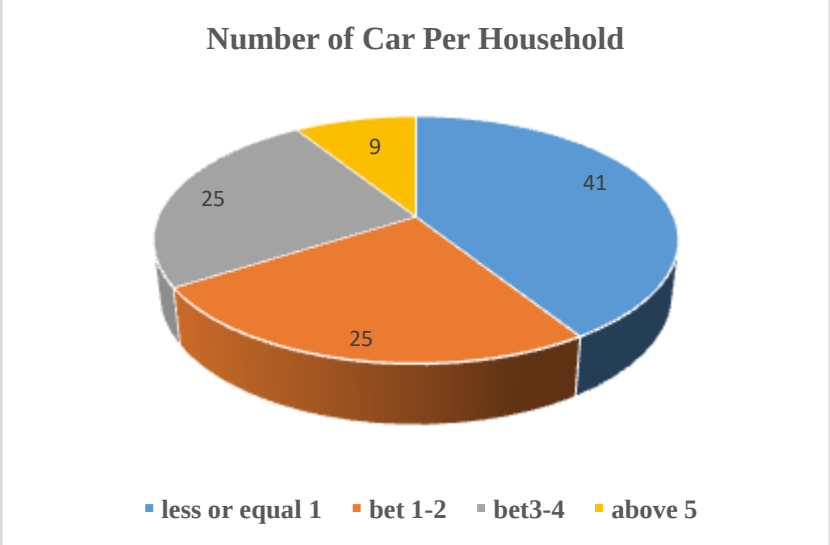


Chart 6: Showing Parking Space Classification

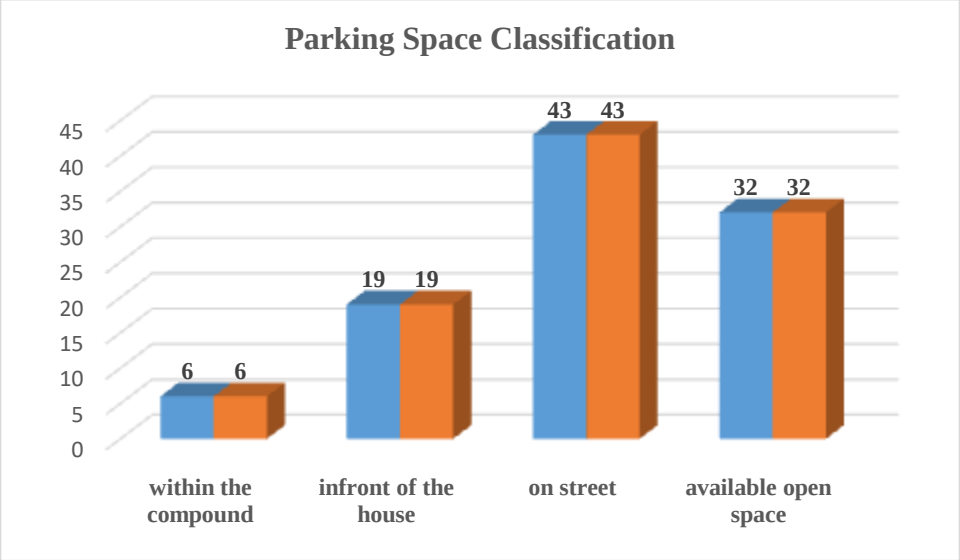
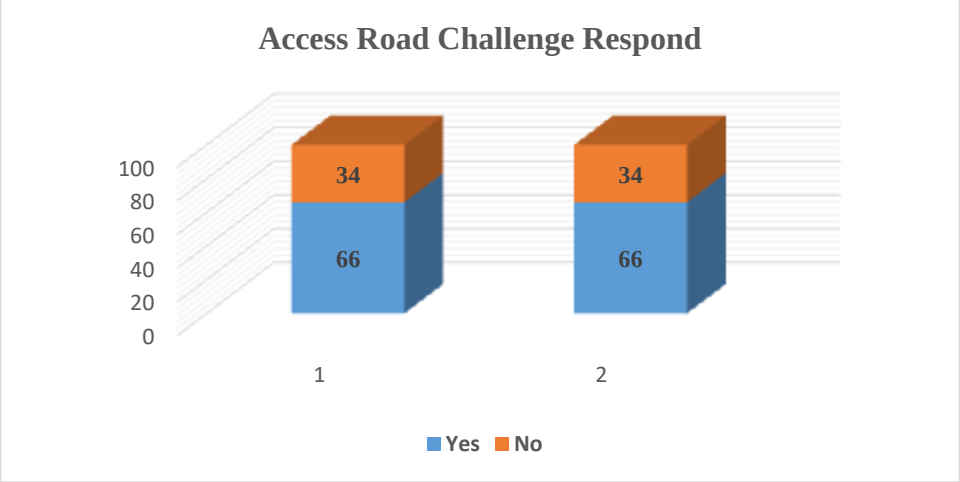


Chart 8: Showing Access Road Challenges & Rating



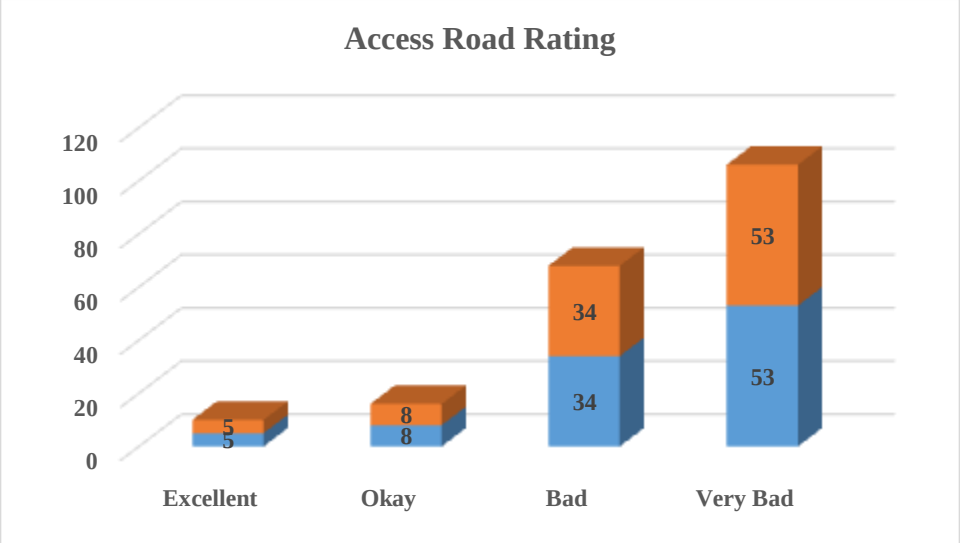


Chart 9: Showing Open Space Analysis

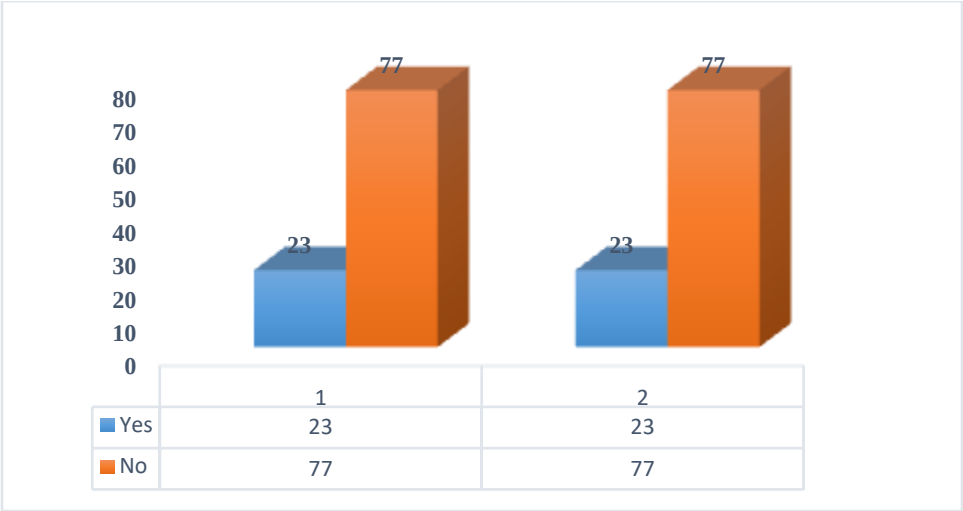


Chart 10: Open Space Uses

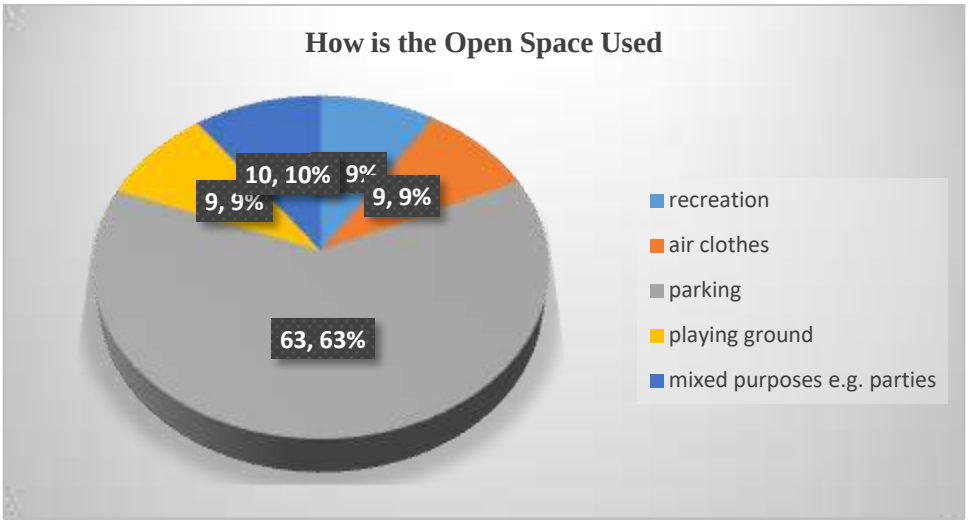


Chart 11: Level of Satisfaction with Sewerage Service

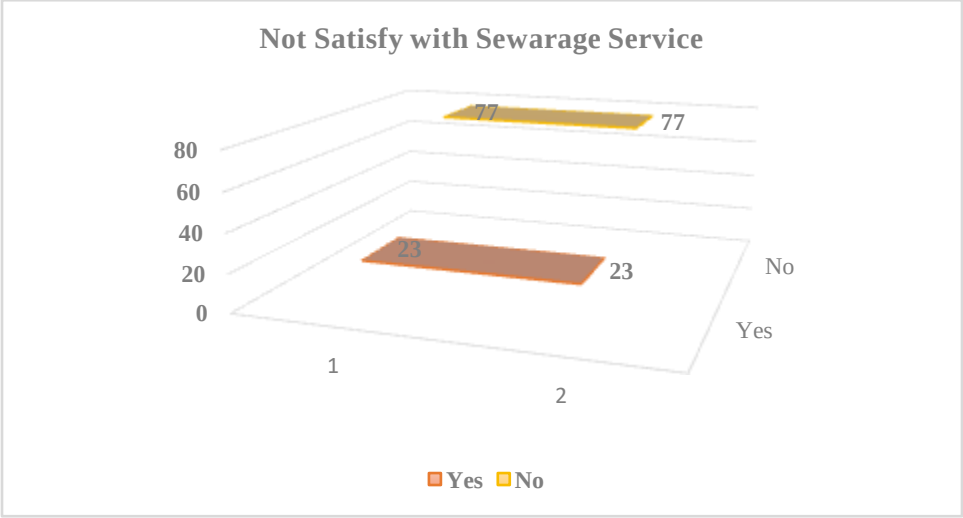


Chart 12: Level of Household Sewer Connections

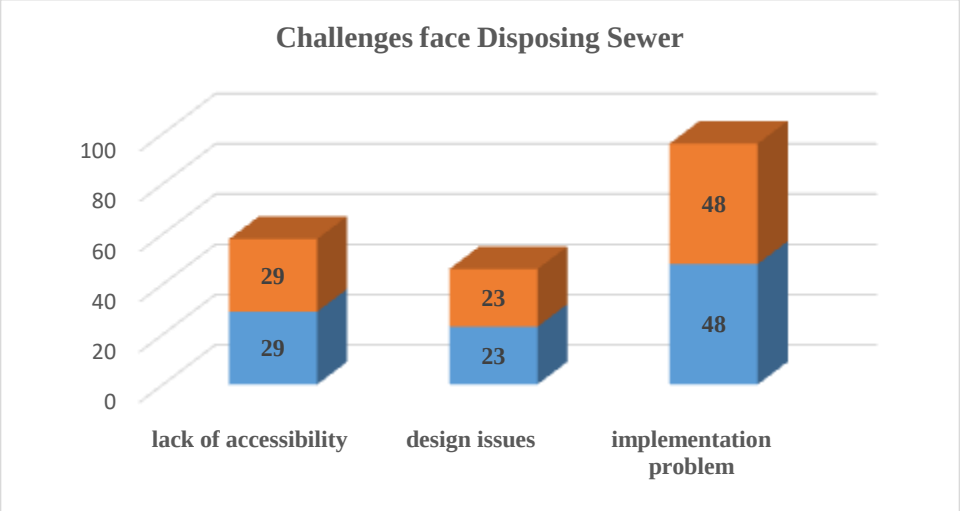
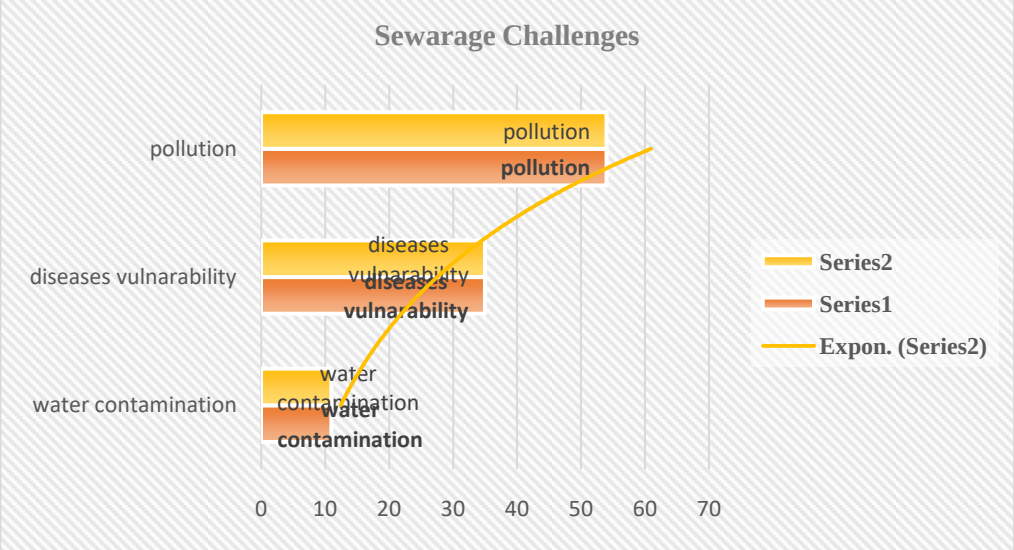
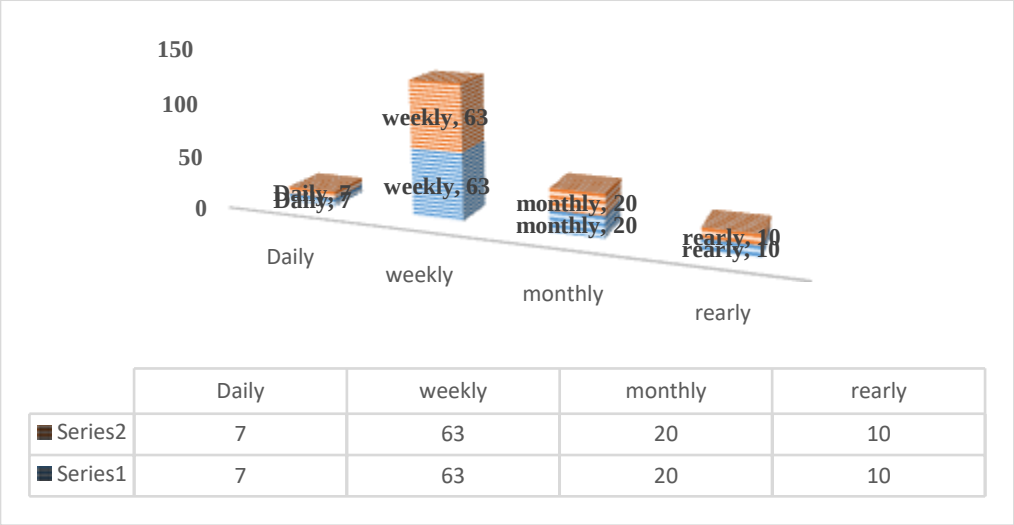


Chart 13: Showing Sewerage Related Challenges





	Daily	weekly	monthly	rearly
Series2	7	63	20	10
Series1	7	63	20	10

Chart 14: Parking Challenges in Estate

Chart 15: Showing the Street Analysis