

***BUILDING QUALITY AND SAFETY CONTROL MANAGEMENT THROUGH IMPACT ANALYSIS IN ARCHITECTURAL PROJECT DEVELOPMENT***

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***Abstract***

*A good urban form and integrated development are not accidental products but a conscious and deliberate process of synergy between the architect and other professionals. Shelter is a key indicator in the quality of life assessment and it impacts other factors such as health, education and communal wellbeing. Hostels are a type of inexpensive, temporary shared housing that promotes social interaction. Every architectural project has physical, biological, cultural and social implications. It therefore behoves on the architect to create a building that is harmonious rather than dominant. Nature is yelling for mankind to live sustainably hence; impact analysis is important and vital to building quality and safety. The technique adopted was project impacts screened using a Modified Leopold Matrix and a modified and simplified overlay technique. This study is inductive qualitative research employing several methods of analysis. The findings indicated that the "build-as planned" alternative is most attractive from the impact analysis leading to better physical, biological, cultural and social benefits.*

*Keywords: Environmental Impact Assessment, Socio-Cultural Consequences, Students Hostel, Construction industry.*

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## 1.0 INTRODUCTION

Construction industry is the most complex of all industries in the economy and its complexity is based on the fact that it provides the environment in which all other companies and sectors work. Construction industry is an industry in which all sorts of local and foreign materials, personnel and equipment coexist to produce high-quality structures. Due to its scale and complexity, the construction industry plays a critical and dynamic part in every nation's process of sustainable economic growth and development (Omenihu, Onundi and Alkali, 2012). Shelter plays an uncompromising function in the development of any nation. Since time immemorial, it has been ascertained and rightly put as a basic need (Makinde, 2013; Akinyode and Tareef, 2014), irrespective of gender or social status. In recent years, people's mindset about housing as a protective agent has changed to that of having socio-economic meaning. With this in mind, it only becomes imperative to see housing more than mere shelter, it is a social need and a necessity. Olotuah (2016) stated that, housing is seen as a representative of social symbol. He stated further that housing reflects social and historical evidence of civilization of the people. Housing might have a similar social identity based on usage and function, it also composed of universal form of cultural identity which is present in almost all societies except in nomadic society.

According to Olatubara (2008) housing varies in types, quality and design from one cultural area to another, also within climatic regions. Nonetheless, the available housing stock in any given society is often made up of diverse packages which by extension goes beyond mere cover. Home relates to both the spatial (in which one resides) and to the social and psychological construct (Maskal, 2015; Kodran, 2016). A hostel is a large house where people can stay cheaply for a short period of time. Hostel dormitories for both male and female students are designed with facilities like cybercafé, study room, common rooms, kitchen, dining hall facilities, etc. The residents are provided with high quality study table, wardrobe and a bed. The hostel management assigns superintendents called porter who are also residents in the hostels in order to maintain peace and harmony. Hostel fees usually include the following: services, power supply, laundry services, breakfast and dinner and sporting area. Impact Analysis is an indispensable action in physical planning and development. As such, it is a pre-condition for the grant of planning approval to any physical development in Nigeria, such as this proposed hostel development. It is in a bid to ease this difficulty that the proponent of the project – Bells University of Technology, Ota is answering to the calls towards improving the housing situation on its campus through construction of a hostel accommodation on her 2 plots of land located at the north-western part of the University Campus, beside the Male Silver Hall 3.

This study presented the impacts that have been identified as having the likelihood of accompanying the implementation of the project. The potential physical, socio-cultural, behavioural and economic influence or impacts were evaluated by considering the anticipated effects of the proposed project described on the existing conditions of the environment. The methodology of impact prediction is presented in a summary of the significant beneficial and adverse impacts. The impact analysis study contains assessment of the proposed Hostel Development Facilities located within the Bells University of Technology, Km 10, Benja Village, Ota, Ado-Odo/Ota Local Government Area, Ogun State, Nigeria. The project is aimed at providing decent and affordable accommodation to the Bells University of Technology students. The project site occupies 2,053.613square meter.

## **2.0 LITERATURE REVIEW**

The design of homes and neighborhoods reflects and protects significant parts of culture and values. The need for housing is not just a fundamental human demand, but also a measure of the population's living condition. Today, it is a hot topic that housing must be pleasant, inexpensive, and relatively maintenance, as well as architecturally expressive and environmentally friendly (Henilane, 2015). Mohammed (2007) described housing as a unit of the environment, and a key element with a huge influence on the health, social behavior, satisfaction and general welfare of the community at large; thus, should not be viewed solely in terms of its physical characteristics, but also with regards to its meaning to the users. In the course of time, the approaches for conceptualizing housing have changed owing to differences in socio-political terrain, economic impact and other fields of life. Ebie (2009) identified housing (hostels) as one of the basic necessities of human existence but ranked second after food in the hierarchy of man's needs. He further stressed the importance attaching to provision of housing, the fact that housing in all its ramifications is more than mere shelter since it embraces all social services and utilities that make a community or neighborhood a livable environment. Melnikas (1998) introduced housing as a particular, physically and socially enclosed place where an individual and more can live and enjoy some comfort and perform their required activities.

## **3.0 METHODOLOGY**

It is generally accepted that the first step in impact analysis is to identify activities within the project scope that may cause impacts. The expected project impacts have been screened using a Modified Leopold Matrix (Leopold, 1971) and a modified and simplified overlay technique (McHarg 1969). The matrix and overlays were used to objectively screen those issues warranting consideration as potential impacts by placing project activities against environmental components, identifying the relative importance of potential impacts for each

component based on Wathern (1988) impact definition, and then assigning indicative impact importance ratings. According to Wathern (1988), an impact is identified as having both spatial and temporal components and can be described as the change in an environmental parameter over a specified period within a defined area, resulting from a particular activity compared with the situation which would have occurred had the activity not been initiated. This is also regarded as "Incremental change". The screening evaluated activities that will or could occur as a result of construction, transportation, raw material use, process operation and maintenance. Other relevant and well-known guidelines and tools for measuring physical, socio-cultural and behavioral impact or influence were also consulted for the screening. Experience from similar projects in Nigeria and worldwide also proved to be valuable. Potential impacts that clearly would not be caused by the proposed project were eliminated from this study.

#### 4.0 CONTEXT OF THE STUDY

The proposed hostel development is to be located at Bells University of Technology, Km 8, Ido-roko Road, Benja Village, Ota in Ado-Odo/Ota Local Government Area of Ogun State. The site is about 1.3km away from the University main gate, 3.35km to Iyesi, and about 1km to Winners Chapel main entrance. Besides, the site is also well connected to several facilities within and outside the campus. Both the Wema and Access Banks are just 500m away from the site, the sport center is within the distance of 820m while the Temperance Hotel is just 1km away from the proposed site. It is worthy to note that Oju-Ore, Sango and Toll Gate, which are the commercial and transportation hubs of the city are about 7.25km, 10.1km and 11.3km respectively to the site. In general, residents of the proposed development will enjoy high connectivity to virtually all parts of Ota and Lagos State. Ota, located in southwestern part of Nigeria, is the administrative headquarter of Ado-Odo/Ota Local Government Area of Ogun State in Nigeria (See Figure 2.1). Its coverage area is 878 square kilometers, which lies between latitude 6°41'N and 6°68'N and longitude 3°41'E and 3°68'E

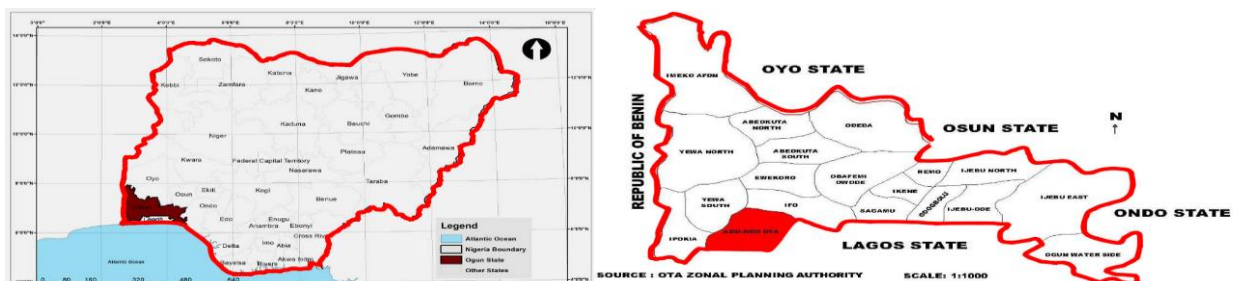


Figure 4.1 Map of Nigeria showing Ogun State & Map of Ado-Odo/Ota LG A within Ogun State



Figure 4.2: Satellite imagery showing the Proposed Site within Bells University of Technology



Figure 4.3 showing Entrance gate of Bells University, Ota

#### 4.1 THE PROJECT DESIGN AND SPATIAL ANALYSIS

The proposed development has the following spatial analysis:

Area of the Site	-	2,053.613m <sup>2</sup>
Area of the Building	-	718.765m <sup>2</sup>
Total Area Available	-	1,334.848m <sup>2</sup>
Percentage Covered	-	35%

##### 4.1.1 Details of The Project

The proposed site comprises of 1 block of 3 floors with 336 bed spaces in all with the following details: Bedrooms; common room, portal office, lounge, conference room, maintenance room, kitchen, canteen/cafeteria, gate house and parking spaces.

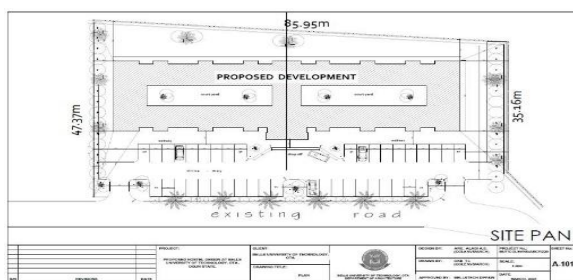


Figure 4.4 showing Proposed site Plan & 3Dimensional view of the Proposed Hostel

#### 4.2 Compliance with Urban and Physical Planning/development Standards and Regulations

The proposed development is hereby assessed with due consideration for the Urban and Physical Planning Regulations relating to development of buildings and physical structures in the State, knowing that the proposed development is a hostel development, therefore, the following parameters were considered:

#### **4.2.1 Land Use Zoning**

The proposed development falls within a student's residential area which without doubt is in conformity with the existing campus master plan. Thus, should be considered to have responded favorably to prevailing circumstances in the area. The proposed hostel development can be said to be complimentary to the prevailing land use in the area.

#### **4.2.2 Plot Coverage**

The Town Planning Regulations provide for permissible maximum plot coverage on a commercial development not to be more than 60% of the entire plot. The proposed development covers a total of 718.765m<sup>2</sup> out of 2,053.613m<sup>2</sup> which represents 35% of the total land area. The proposal therefore is in conformity with the regulations on plot coverage.

### **4.3 GEOGRAPHICAL CHARACTERISTICS OF THE STUDY AREA**

#### **4.3.1 Soil**

The sub-soil in the project area falls within that of Ogun River flood plains and valleys which represent "a classic case of deep deposit of alluvium in the form of normally consolidated very silty organic clays, peaty clays and peat occurring at varying elevations and thickness. The materials of the coastal plain sand which occur within the site are adjudged good foundation material and may support up to 120 K/Nm<sup>2</sup> in allowable bearing capacity" (OSRP).



Figure 4.5: The Proposed Site

#### **4.3.2 Vegetation**

Ota is within the area classified as rain forest zone of Nigeria with mean annual rainfall of about 800mm. Also located within the Southwestern Nigeria part of the Dahomey Basin (also referred to as the Benin or Keta Basin in Nigerian Literature); a sedimentary depositional basin which extends from southeastern Ghana in the west to the western flank of the Niger Delta.

#### **4.3.3 Climate**

The climate of this area can be described as a microcosm of the entire region. A well-known fact remains that vegetation influences the temperature and amount of rainfall of a place in no small measure, all the same, the climate of this site is not entirely different from that of the region. The annual rainfall is between 1350mm and 1400mm with substantial percentage falling during the rainy season. This is within the months of April to October each year. There are two seasons prevalent in this area throughout the year and these are;

- (i) The dry season and harmattan from November to March and
- (ii) The wet season from April to October.

### 4.3.4 Clouds

Over the course of the year in Ota, there is a notable seasonal change in the average proportion of sky that is covered by clouds. Around November 6 until around February 12, Ota experiences its clearest period of the year, which lasts 3.2 months. On December 26, the clearest day of the year, the sky is clear, mostly clear, or partly cloudy 56% of the time and overcast or moderately cloudy 44%. The year's cloudiest period starts around February 12 and lasts for 8.8 months, ending around November 6. 87 percent of the time on May 12—the cloudiest day of the year—the sky is overcast or largely cloudy, and 13 percent of the time it is clear, mostly clear, or partly cloudy.

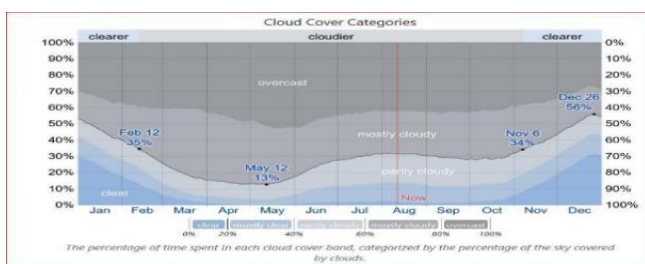


Figure 4.6: Cloud Cover Categories

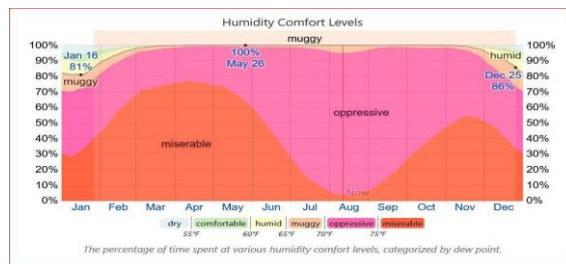


Figure 4.7 Showing Average Humid level

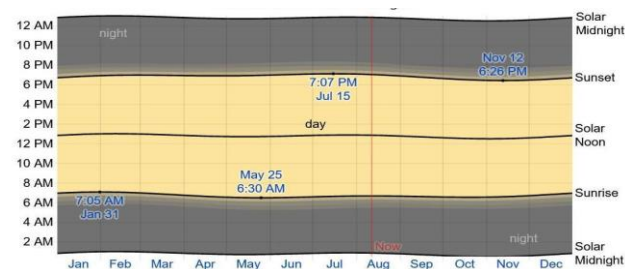


Figure 4.8: Sunrise and Sunset with Twilight

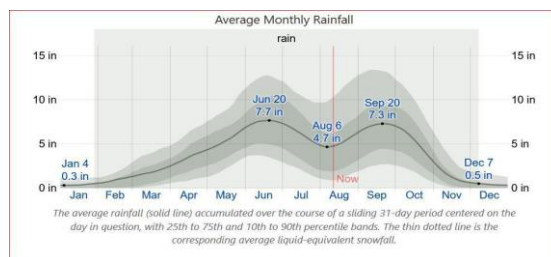


Figure 4.9: Average Monthly Rainfall

#### **4.4 CHARACTER OF THE IMMEDIATE ENVIRONMENT OF THE PROJECT**

##### ***4.4.1 Physical Condition of the Proposed Project site***

The site terrain is relatively flat land with gradient generally less than 2% with no significant topographical restriction for building development. In the process of land grading, the site has been cleared of its primary vegetal cover. There is blocked drainage at the norther part of the site, the drainage that collect waste water and run-off water from the adjoining hostels did not follow the natural gradient of the site. There is no cultural or archeological feature on the site that may warrant restriction of land use.

Plate 4.2: Blocked Drainage Channel at the northern part & Existing Access Road to the site



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Plate 4.3: Uncompleted Building beside the Site



Plate 4.4: Drainage Channel beside the Site



#### 4.4.2 Power Supply

The Ibadan Electricity Distribution Company (IBEDC), which has a substation in Ota, is the main supplier of electricity for home, commercial, and industrial use in the study area. A 33KV distribution network supplies the substation, the town, and surrounding places with power.

Plate 4.4: Electricity Network close to the Site Plate 4.5: Electric Pole within the Site 4.4.3



#### Water Supply

Water supply to project area is majorly through corporate efforts. Most Universities take responsibility for their water supply by sinking boreholes. It is envisaged that the proposed facility will provide for its water needs. This will be sourced from the sub-surface and treated to meet the standard expected in an operation of this nature.

Plate 4.6: Water Facilities close to the Site



#### 4.4.4 Telecommunications

Before the emergence of GSM, land-based cable telephone lines provided by Nigerian Telecommunication Limited (NITEL) are widely used in most parts of Ogun State. However, in the late 1990s private telecom services emerged. Some of the active private telecom services in the vicinity of the site are MTN, Airtel, Glo and 9mobile. All the GSM services are available

at the project environs and are very effective, hence, it could therefore be said to have adequate access to telecom service

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**Table 5.1: Summary of Impact During Construction Activity**

	Duration	Frequency	Extent	Magnitude	Sensitivity
Air Quality	Major	Moderate	Minor	Major	Major
Noise Level	Major	Moderate	Minor	Major	Major
Wild Life	Moderate	Moderate	Minor	Moderate	Moderate
Vegetation	Major	Moderate	Minor	Moderate	Moderate
Disposal Of Vegetative Material	Major	Moderate	Minor	Moderate	Moderate
Provision of Job	Major	Major	Major	Major	Major
Transportation	Moderate	Moderate	Minor	Moderate	Moderate
Infrastructure	Moderate	Moderate	Major	Moderate	Moderate
Waste Management	Moderate	Moderate	Minor	Moderate	Moderate
Noise And Illumination	Major	Major	Minor	Moderate	Major

Key	Major	Moderate	Minor
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## 5.0 IMPACT ANALYSIS

### 5.1 ASSESSMENT METHODOLOGY

The assessment of the likely physical, socio-cultural, behavioral and economic impacts or the likely environmental changes that would be occasioned by the implementation of the proposed hostel accommodation has taken into consideration the results of the related screening and the scoping process as the baseline for judging the dimension and magnitude of impact on the project's environment.

Assessment of impacts have been rated and portrayed in a matrix form according to the ranked values shown in Table 5.1.

**Table 5.1: Assessment of Impacts with Ranked Values**

Criteria Used in Weighting	Ranking (Score)
Very High Positive Impact	+ 5
High Positive Impact	+ 4
Moderate Positive Impact	+ 3
Low Positive Impact	+ 2
Least Positive Impact	+ 1
Neutral or Insignificant Impact	0
Least Adverse Impacts	-1
Low Adverse Impact	- 2
Moderate Adverse Impact	- 3
High Adverse Impact	- 4
Very High Adverse Impact	- 5

The range of ranking is +5 – 0 – -5

#### Scoring Based on Percentage

$$100/5 = 20$$

$$\text{Thus } +1 = +20\%$$

$$-1 = -20\%$$

## Critical Acceptance Level

**The Critical Acceptance Level for this project is put at 65%**

### 5.2 BASELINE FOR IMPACT ASSESSMENT

An Impact Analysis and evaluation will be incomplete without considering the development goals and objectives of the local community residents alongside with the objectives of environmental protection as indicated in government policies, regulations and plans regulating and controlling land development in order to strike an acceptable balance of interests. Two harmonious and compatible value systems have been found convenient and useful for formulating and collating the checklist of environmental impact in this report, namely:

- a. **Environmental Values** - Which seeks to preserve nature, conserve resources and control pollution.
- b. **Humanistic Values** - Which places people's survival first, meeting basic needs, giving priority to human development embracing cooperation, decentralization and optimism.

The development objectives of the project's local community accommodate to a large extent the humanistic values while the objectives of environmental protection embrace the environmental values. The interest, aspirations and development objectives of the local community, though varied, could be summarized as follows:

- i. **Natural Environmental** - To minimize environmental degradation and conserve resources; safeguard ecological balance;
- ii. **Health/Environmental** - To minimize the detrimental effects of all life forms, nuisances, hazards and the improvement of environmental hygiene to improve human physiological comfort;
- iii. **Utility, Services and Infrastructure** - Extension and improvement of physical infrastructure system (e.g. pipe-borne water, electricity, telephone). Improvement of access to public and private services and community facilities (e.g. housing, health, education and recreational facilities); by safe, reliable, convenient and reasonably cheap means of communication;
- iv. **Local Economy** - Enhancement of revenue base of residents and that of the local administration without recourse to excessive taxes;
- v. **Social Conditions** - Promotion of good psychological well-being and community morale without extreme distortion of the life patterns and neighbourhood cohesion; and

**Aesthetics** - Protection and improvement of the physical landscape and cultural resources. The assessment of impact of the project on the total environment is approached from the broad perspectives of environmental and incidental impact categories highlighted below.

### 5.3 ASSESSMENT OF PROJECT IMPACT

#### 5.3.1 Impact and Mitigation Measures

Within the context of physical, socio-cultural, behavioral and economic, it implies the effect of an action on the environment whether significant or otherwise. Examples of such impacts or effects relating to the proposed hostel development and its immediate environment include the followings:

#### 5.3.2 Pollution and Ecology

Effects on air, water, noise and vibration levels, radiation levels, flora and fauna, ecology, biodiversity, contamination levels, health, areas of outstanding natural beauty, traffic generation and management, soil erosion and land degradation, drainage and sewerage, open space, waste generation and management and climate.

#### 5.3.3 Natural Resource

Effects on agricultural land, water supplies (including ground water), minerals, energy resources, building materials, wilderness and bush.

#### 6.3.4 Social

Effects on population patterns, employment, land usage, housing, social life, welfare, recreation, community facilities and services, accessibility, safety, youth, the elderly, the disabled, and women. The impact of any project may be micro (local) or macro (global) in nature. However, because of the magnitude of the project at hand, the envisaged impacts would be local in nature.

**Table 6.2: Impact Categories and Measurable Parameters**

Impact categories	Measurable parameters
Land use control and Regulations	Land use zoning, site layout (setbacks), plot coverage, parking provision, access and circulation
Natural ecology	Species and population habitat and communities Ecosystem
Human interest	Local economy, life pattern, mood and atmosphere, socio-economic, cultural, historical, scientific package
Amenity and aesthetics	Facilities, services provided, visual effects on land, air, water, biota, man-made objects and composite landscape
Environmental	Pollution effect on water, land, air, quietude and their implications for human health, safety and comfort
Land development Capacity and Suitability	Nature of land configuration, slope conditions, geological and soil, hydrology and drainage

### 5.4 ASSUMPTIONS

Highlighted below are the assumptions considered relevant and pertinent to the validity of the anticipated impacts identified and assessed in this report viz:

- That the magnitude and scope of identified impacts are site-specific and strictly related and limited to the construction and use of the proposed hostel Facilities;
- That the project execution would strictly comply with the planning regulations and current standards on physical development on land; and
- That the project would be carried out in no distant future before the existing project environment changes significantly.

The result from Table 6.3 indicated that the project scored **80%** and relating the difference derived from the table to the stated Critical Value of **65%**, it implies that the derived value is higher than the Critical Value, **therefore the project is acceptable.**

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**Table 5.3: Impact Mitigative Measures**

FACTOR	IMPACT	MITIGATIVE MEASURES
Physical	Foundation Support	Appropriate foundation as designed by structural engineer.
	Soil Bearing Capacity	Bearing Capacity of 157.37KPA.
	Ecology	Proper landscaping to be used in restorative work.
	Odour	Proper construction of septic tanks and soak away pits.
	Noise from generating sets	Silenced and sound proof generators should be provided and regularly maintained.
	Flooding	Proper drainage system and channels to be constructed and cleared frequently.
	Fire hazards	Fire hydrants, hose and sprinkler system to be provided at strategic points in the building and on the site to be used for fire prevention and control.
	Health and Safety	Good housekeeping, clean environment, fumigation to control vectors. First Aid boxes to be provided in the building for emergency purposes
	Crime	Police to handle the cases that may arise, internal vigilance
Infrastructure	Pressure on Public Water Supply	Drilling of boreholes can effectively handle the issue. Overhead tanks can be used to store water for industrial use and firefighting.
	Pressure on Electricity	PHCN and the generating sets can handle such cases.
	Pressure on existing transportation system	Parking spaces to be provided and regulations put in place to control indiscriminate parking.
	Increase in traffic volume	Proper circulation to be ensured by use of regulations.



## **6.0 CONCLUSION AND RECOMMENDATIONS**

### **6.1 Introduction**

The study established that the construction of a hostel facility within Bells University of Technology is environmentally feasible and sustainable. The main sustainability factor for the project is the availability of a large market for the skilled labour and good access to the proposed project site. The analysis indicated that the "build -as planned" alternative is most attractive and is therefore recommended as means to control building quality and safety in Nigeria construction industry.

### **6.2 Recommendation**

It is believed that the following recommendations and those incorporated in the text of the report will enable the proponent to achieve an environmentally friendly operation throughout the life cycle of the project.

- **Mitigation Measures**

Incorporate all the identified mitigation measures into the operations of the hostel, in order to reduce the impacts for which they are designed.

- **Water Spraying of Roads**

The main access road to the project site should be sprayed with water regularly, especially in the dry season to prevent raising of dust by vehicles.

- **Biannual Monitoring**

Commence the 4-year biannual monitoring of the site, six months after commissioning of project. An accredited consultant can be commissioned to handle this exercise.

- **Safety Training**

Safety training should be mandatory for the staff of the proposed development to ensure a high level of awareness and readiness to act correctly in emergency situations.

- **Solid Waste Management Plan**

Solid waste management plan should be designed and appropriate personnel assigned responsibilities for implementation. Refuse bins should be provided at appropriate locations to collect solid wastes and handle solid wastes during and after construction.

- **Drainage Channel**

Due to the low-lying nature of the site as at the time of site investigation there will be need for sand filling beyond the existing water ponding level. The drawings to be submitted for planning permit shall include civil engineering solution to enhance drainage on and around the site.

#### **6.4 CONCLUSION**

The proposal for hostel facilities by Bells University of Technology at Km 8, Idiroko Road, Benja Village, Ota, Ado-Odo/Ota Local Government Area, Ogun State, has been assessed for its impact on the totality of its environment. This assessment has taken into consideration not only the socio-economic, psycho-social and cultural environment but also the infrastructural systems, utilities and service provisions against the background of existing situation, government policies and regulations, operative planning standards and community aspirations. The analysis of observed and anticipated impacts that the physical development and project activities will cause if the project is executed has been presented. In the aggregate, land development/site improvements, and economic and fiscal impacts from the project will be generally positive. While the beneficial effects of site development (i.e. enhanced visual image) are localized, the potential and community gains will extend beyond the immediate locality of the site. Anticipated socio-cultural consequences of the project are adjudged to be beneficial. It is envisioned that this project will promote and provide economic resources for public enjoyment and also broaden social and economic base of the area. Potential adverse consequences and threats to the environment associated with the project include pollution anticipated from wastewater, noise from normal factory and office processes, vehicular traffic, and electricity generating set. Although the anticipated negative impacts are of little significance considering the scale of the project, they are mainly localized, not totally unavoidable and can be mitigated as discussed. adverse impacts both on spatial and temporal dimensions. It should be noted that no major developmental project is without negative impact however little or tolerable it may be, what is important is for the negative consequences of the project activities to be managed within tolerable limits and assimilative capacity/threshold of the local environment - a situation that is most probably assured by this project. It is therefore our candid opinion that on the whole, the proposal holds promise of a net beneficial impact on the totality of its environment and should therefore be allowed to proceed. From the results of the impact assessment, the aggregate of physical, socio-cultural, behavioral and economic impact anticipated from the proposed project is adjudged beneficial and outweighs the associated potential challenges.

## REFERENCES

- Akinyode B. F. & Tareef, H.K. (2014). Bridging the Gap between Housing Demand and Housing Supply in Nigerian Urban Centres: A Review of Government Intervention So Far. *British Journal of Arts and Social Sciences*, J8(II), 94-107.
- Ebie, S.P.O.F. (2009, May). Public sector driven housing; achievements and problems. Paper presented at the 2009 Faculty of Environmental Sciences Annual lecture, Nnamdi Azikiwe University, Awka.
- Henilane, I. (2015a). The Evaluation of housing situation in Latvia. In *XVI Turība University International Conference, Towards Smart, Sustainable and Inclusive Europe: Challenges for Future Development*, pp. 93–106. Riga, Latvia. ISSN 1691-6069.
- Makinde, O. O. (2013). Housing delivery system, need and demand. *Journal of Environment, Development and Sustainability*: DOI 10.1007/s10668-013-9474-9, Retrieved February 2014,
- Melnikas, B. (1998). Management and modernization of housing facilities: specific features of central and eastern European countries. *Facilities*, 16(11), 326–333.
- Muhammad M., Bichi A. M. (2014), Constraints and challenges on housing provision in Kano City, Nigeria, *International Journal of Advancements in Research and Technology* 3(6): 4-23.
- Omenihu, F.C., Onundi, I.O. & Alkali, M.A (2012). An analysis of Building Collapse Nigeria (1971-2016): Challenges of Stakeholders.
- Olatubara, C. (2002). Housing policy and its impact on the populace: The elusive solution to the housing problem. Paper presented at the Being a paper presented at the *Continuing Professional Development Workshop on Housing Policy and Its Impact on the Populace, Organized by the Nigeria Institution of Estate Surveyors and Valuers, Ogun State Branch*.
- Olotuah, A. O. (2016). An appraisal of housing and neighbourhood quality in residential estates in Akure, Nigeria. *Mediterranean Journal of Social Sciences*, 7(3 S1), 424-424.

## AUTHOR'S BIBLOGRAPHY



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## SECOND AUTHOR'S BIBLOGRAPHY



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