

CHAPTER FIVE

5.0 APPROACH TO THE DESIGN/DESIGN REALIZATION

In approaching this design, many factors, strategies and research work were taken into consideration. Some of the factors include functionality, durability, and cost of materials.

Their search work that were carried out are the study of the area, the neighborhood value. Statistics and population of the community, the household value, the occupations and social lives of the occupant of the area.

These factors and deductions were highly considered in the development of this project to achieve a functional and aesthetically balanced design.

5.1 TECHNOLOGICAL AND ENVIRONMENTAL CRITERIA

5.1.1 CONSTRUCTION METHOD

The method of construction involved in the erection of the building structure is in accordance with the architectural detail required in executing the buildings and the process of construction that is critical to structural component as affected by the site conditions and types of materials to be used.

After the preparation of the overall site plan, many designs are developed to show the specific methods of construction. These details as an integral part of the design process and serve two important purposes. Firstly, they stipulate the aesthetic as structural element of the plan and they provide the basis for costing project.

The section is not intended to present aesthetic or design solution **alone but also** indicate how similar technological difficulties are handled, it is clear that the method of construction of any structure such mass housing is determined from the functional requirement of the facilities provided and its exposure to weather and climatic condition for any use, the following factors are considered; Climatic conditions of the site, Condition of the sub-soil present on the site, Fire protection requirement, Appearance of materials, Durability and easy

maintenance, Economy, Availability of materials, Aesthetic, Construction technique and Cost of materials. The various building components taken into consideration are:

1. **SUB-STUCTURE:** This is the part of the building below the natural ground level. The foundation footing is reinforced for stability of the building to enable it to withstand the load (live, superimposed and wind load). The foundation of the building shall be determined by the structural engineer according to the bearing capacity of the soil.
2. **SUPER-STRUCTURE:** This is the building part that is above the natural ground level. The entire structure is designed with reinforced concrete columns, beams and hollow sand screed block.

5.1.2 MATERIALS AND STANDARD FORMS

The following materials are applied in the construction of the structure such as:

- A. **FLOORS:** The ground floor will be of solid concrete slab of 150mm with asphalt coating as damp proof course laid on well compacted hardware. The upper floors are reinforced concrete suspended floors of 150mm thick.

Floor finishes are to be specified for each unit depending on the function it is meant to serve. Floor finishes are to be specified for each tiles and terrazzo floor tiles because they are durable, easy to maintain and do not wear easily.

- B. **DOORS:** The size and types of doors used depend on its location but generally the size ranges from 1200mm, 900mm and 750mm and the type of materials specified for the construction is in the door schedule which should be strictly followed.
- C. **WINDOWS:** A window in a building is designed primarily to allow natural light, natural air, the building issued to allow free flow of carbon dioxide out of the building as well as to allow for outside view.
- D. **ROOFS:** Roof members of all building will be made up of timber and long span of aluminum roofing sheet. This is for the easy maintenance of self-support and longer life span.

- E. **CEILING:** The kind of ceiling system specified for the building in the housing estate is the asbestos ceiling sheet. The functional requirement of this ceiling is considered under the following: Durability, Easy to maintain, Heat resistance and Cost

5.2 SERVICES REQUIRED

Services are essential for comfort ability security and safety to create a conducive atmosphere for the user of the housing estate to achieve this, the following services must be provided.

1. ELECTRICITY: The main source of electricity is from the national electric power authority and this should be connected to the site from the power in front of the site way.

2. VENTILATION: Ventilation needed in the intention part of building varies from place to place. Natural ventilation is considered best in building construction and is attained with the use pf natural air. Natural air reaches interior part of the building through windows **and some other** openings. Artificial ventilation is attained with the use of fans and some other atmospheric cooling machines.

3. LIGHTNING: Natural lightning is the best and most effective source of light for the building though artificial sources will be used where necessary.

4. PLUMBING SERVICES: All water supplies and other distribution to all the required areas would be through 50mmdiameter galvanized steel pipe while sewage will be PVP service pipe, which ranges from 50mm, 100mm and 150mm diameter. All the baths and shower will be provided with shower tray, towel trays, washing hand basin and tissue roll holders. The entire toilet WHB will be with a mirror over it. Septic tanks and soak away pit shall be placed and in suitable location for easy maintenance.

5. ACOUSTICS: The major noise comes from the major road and this could be reduced considerably by maintaining a reasonable setback from the major

road and the proper landscaping which include planting of trees and grass to serve as noise and sound absorbent.

6. WASTE DISPOSAL: Waste disposal should be provided where unwanted material such as dirty should be dump in order to make the environment clean.

7. FIRE PROTECTION: Structural protection is achieved by using fire resistance elements and limiting the use of combustible materials and finishes. Fire detectors and firefighting equipment should be provided.

8. SECURITY SERVICES: The entry and exit to the site have been restricted to one entrance. This is to monitor the movement of vehicles in and out of the site. The entrance will be maintained with the security men checking incoming and outgoing vehicles. The entire site will be light up with security light and street light within the site. It is necessary to fence the mass housing to ensure adequate security, a strong fence is provided in addition to police post in order to keep off intruders of all types.

9. EXTERNAL WORK: These are work carried out outside and around the building. It is otherwise known as Landscaping. These are elements used to provide aesthetics and general human comfort in and around the building. There are two types of landscaping: Soft Landscaping and Hard Landscaping

i. SOFT LANDSCAPING: This is done by planting trees, shrubs and lowers around the building to serve as barrier to the thermal discomfort and beautify the structures.

ii. HARD LANDSCAPING: This is done by paving the whole of the open ground and such paving area include the parking lots, the walk ways, roadster.

5.2.1 ENVIRONMENTAL CONDITIONS TO BE ACHIEVED

There is plantation of trees to regulate the temperature. The orientation of the building structure to achieve maximum comfort thereby controlling the radiation.

5.2.2 PERFORMANCE STANDARDS

The performance standard of the building construction is to be highly luxurious because of the targeted users and the occupants of the town which have a high taste of social lives.

5.2.3 LEGAL ISSUES AND PLANNING REGULATIONS

The proposed building must pass through various process in order to be approved of the planning regulations of the local government authorities and the board of chiefs because of its being public building. The process for approval in the local planning authority is to provide the following which are: The C of O of the Land, The Survey Plan, The original land purchase documents, The Structural Drawings, The Architectural Drawings and The Mechanical and Electrical Drawings.

5.2.4 BEHAVIOURAL PATTERNS AND CONSIDERATIONS

The condition in designing the housing estate is for comfort ability and affordability of the proposed tenant and user of the estate, providing adequate recreational facilities and securities.

5.3 CONCLUSION AND RECOMMENDATIONS

5.3.1 CONCLUSION

This project has examined the contextual and organizational challenges in public housing provision in Ilorin east local government, kwara state.

Research shows that since independence in 1960, government in Nigeria have demonstrated commitment to addressing the housing problems in several ways but due to funding, political and organizational challenges, public housing agencies have provided insufficient number of poor quality and unaffordable.

5.3.2 RECOMMENDATIONS

1. Adopt Comprehensive Urban Planning Principles
2. Implement a well-structured master plan incorporating zoning, access roads, drainage, green spaces, and essential infrastructure.
3. Use GIS and modern survey techniques to assess site suitability and mitigate environmental risks. Promote Use of Durable and Affordable Building Materials
3. Encourage local, sustainable materials like stabilized earth blocks, interlocking bricks, or treated timber.
4. Enforce material quality standards through testing and certification.
5. Enforce Building Codes and Standards
6. Collaborate with urban development authorities to ensure all buildings meet national and international building codes (e.g., NIA/NIBS standards).
7. Conduct periodic inspections during construction to prevent structural defects. Incorporate Sustainable Infrastructure and Services
8. Provide reliable water supply, sanitation systems, waste management, and electricity from the beginning.
9. Explore renewable energy options like solar streetlights and solar rooftops to reduce reliance on erratic public supply.
10. Ensure Proper Layout and Density Management.
11. Avoid overcrowding by using population projections and planning unit layouts based on per capital land requirements.
12. Allocate open spaces, recreational zones, and buffer areas to promote healthy living.
13. Establish Housing Maintenance Systems.

- 14.**Create a resident housing association or facility management system for maintenance of common facilities (e.g., sewage systems, roads, lighting).
- 15.**Implement a maintenance fee scheme to ensure long-term upkeep

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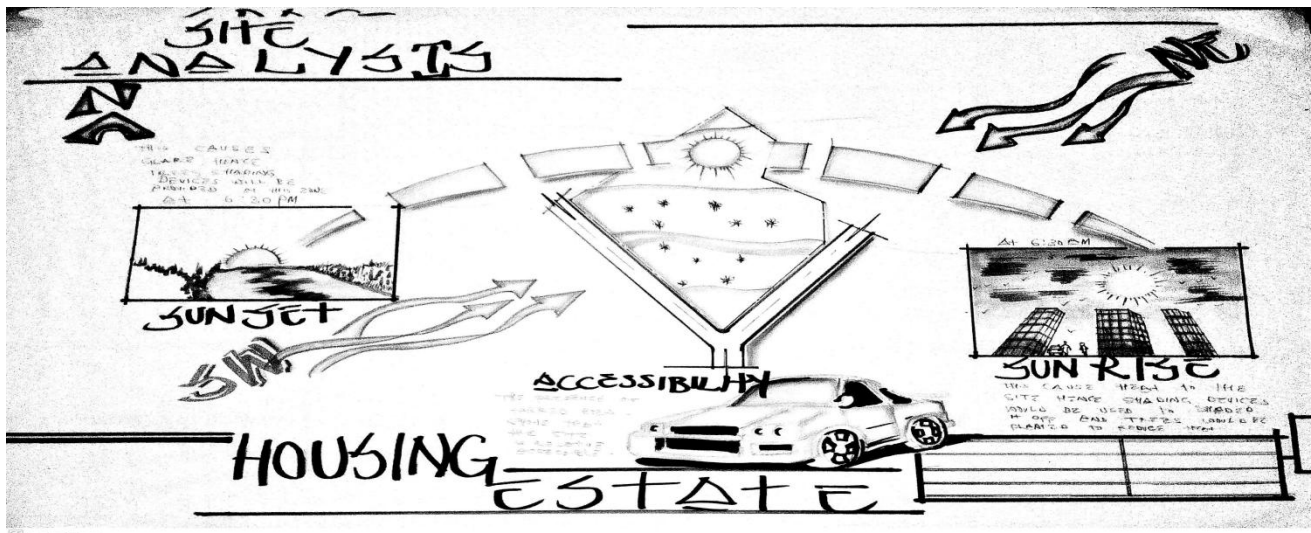
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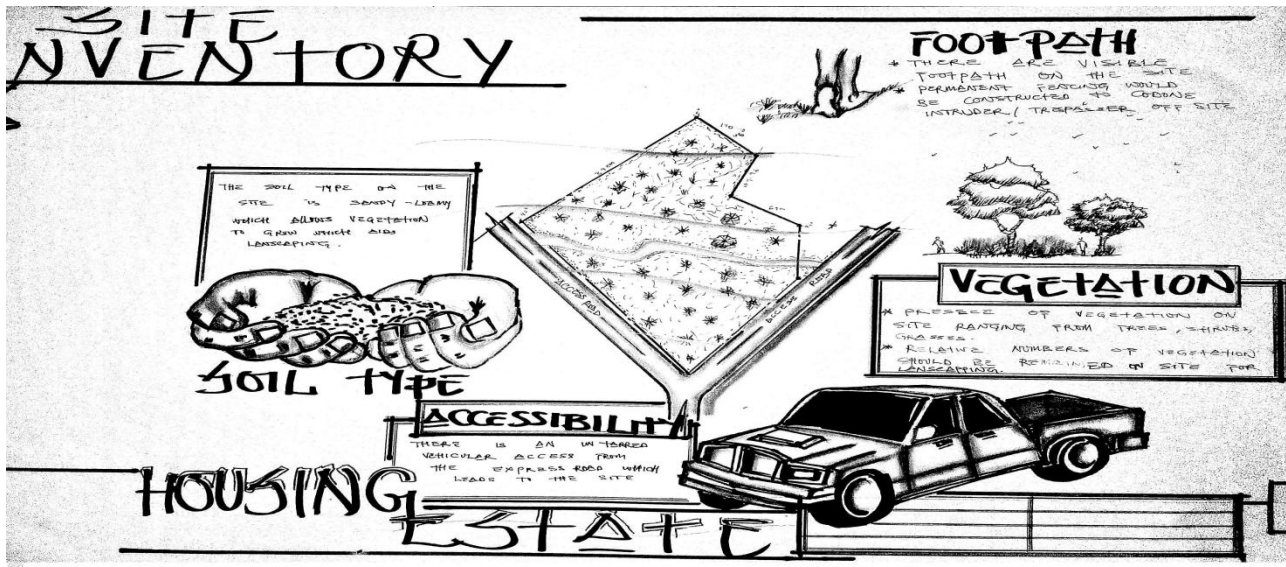
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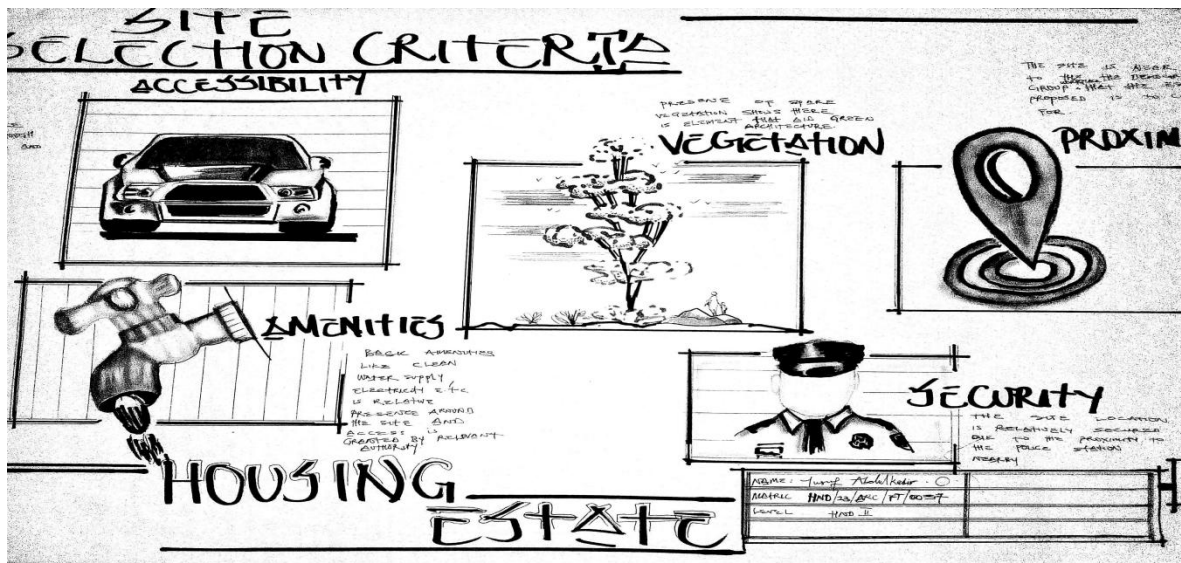
APPENDICES



APPENDIX 1: SITE ANALYSIS

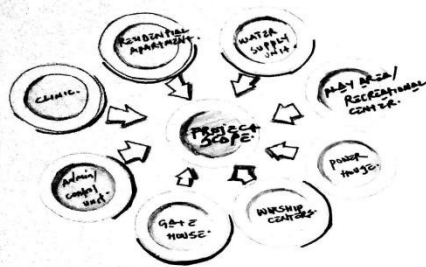


APPENDIX 2 :SITE INVENTORY



APPENDIX 3: SITE SELSCTION CRITERIA

PROJECT & DESIGN SCOPE



PROJECT SCOPE

DESIGN SCOPE		
1 BEDRM UNIT	2 BEDRM UNIT	3 BEDRM UNIT
1. ENTRANCE & CONVEYANCE 2. SITTING ROOM 3. KITCHEN 4. GATE 5. 1 BEDRM	ENTRANCE SITTING ROOM DINING ROOM KITCHEN SHED 2 BEDROOMS BATHROOMS WATERFACE	ENTRANCE SITTING ROOM DINING ROOM KITCHEN SHED 3 BEDROOMS BATHROOMS WATERFACE GATE HOUSE
2 bedroom semi detached townhouse	RECREATIONAL CENTRAL	
CONVEYANCE 1. GATE HOUSE 2. ENTRANCE 3. ESCAPE		

DESIGN SCOPE

HOUSING

APPENDIX 4: PROJECT SCOPE AND DESIGN SCOPE

PROGRAM DEVELOPMENT

SN	CATEGORY	BUILDING TYPOLOGY	NO OF BUILDING UNIT	NO DWELLERS	PERCENTAGE	TOTAL
1-6	LV 1-6	1 BEDROOM BUNGALOW				
7-9	LV 7-9	2 BEDROOM BUNGALOW				
12-14	LV 12-14	3 BEDROOM BUNGALOW				

HOUSING ESTATE

APPENDIX 5: PROGRAM DEVELOPMENT

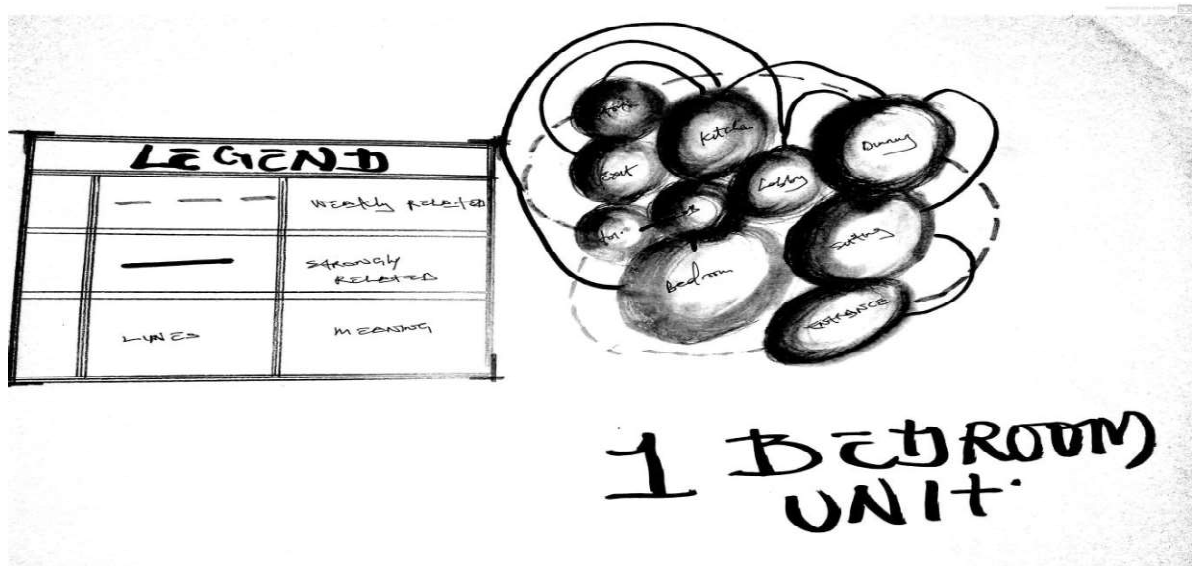
3 BEDROOM UNIT

SPACE	Function	UNIT	FURNITURE	DIMENSION	AREA	NO OF REQUIREMENT	S X [2] (M)	60% GFC	Total Area
ANTE ROOM	Welcoming Guest	1	Seater Table	0.80 X 1.50 0.50 X 0.90	1.20 0.45	1	1.60 0.45	0.96 0.27	
LIVING AREA	RELAXING MEETING VISITOR	1	Seater Coffee table side table Book shelf	0.80 X 3.00 0.90 X 1.50 0.70 X 1.50 0.60 X 1.50	2.40 1.35 1.05 0.90	4	2.70 1.35 0.70 0.90	0.96 0.81 0.36 0.54	
BED ROOM	SLEEPING RESTING SLEEPING	3	BED BEDSIDE CABINET WARDROBE WATER	1.50 X 2.00 0.60 X 0.60 0.70 X 1.50 0.80 X 1.50	3.00 0.36 1.05 1.20	10 2 1 1	3.00 0.36 1.05 1.20	3.6 0.43 1.26 1.44	
CONVENIENCE	Hand washing Excretion PUSHING	4	WASHING HAND BATH WATER closet SHOWER TRAY	0.70 X 0.50 0.40 X 0.25 0.70 X 0.90	0.35 0.10 0.63	1 1 1	0.35 0.10 0.90	0.42 0.12 2.16	
DINING AREA	SEATING RELAXING STORAGE	1	TABLE CHAIR REFRIGERATOR	1.20 X 2.00 0.65 X 0.45 0.75 X 0.85	2.40 0.29 0.64	1 4 1	2.40 0.29 0.64	1.44 0.36 0.36	
KITCHEN	COOKING WASHING STORAGE	1	KITCHEN CABINET COOKER SINK	0.60 X 1.00 0.60 X 0.50 0.60 X 1.20	0.60 0.30 0.72	1 1 1	1.20 0.30 0.72	0.72 0.36 0.86	
STORE	STORAGE	1	CABINET	0.40 X 2.00	0.80	1	1.20	0.72	

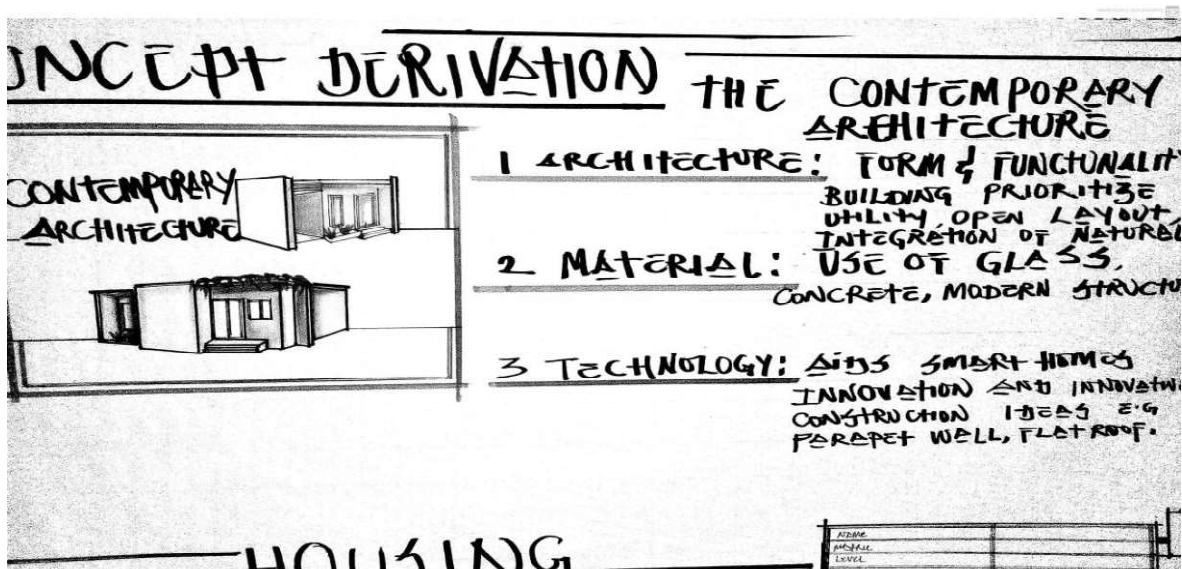
APPENDIX 6: SPACE CALCULATION



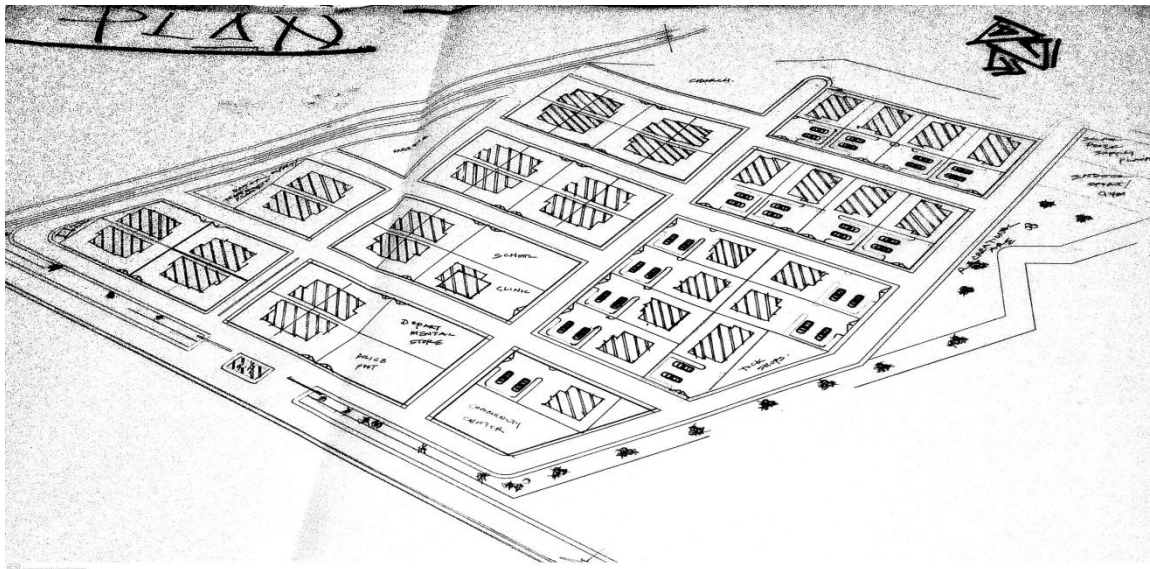
APPENDIX 6: BUBBLE DIAGRAM



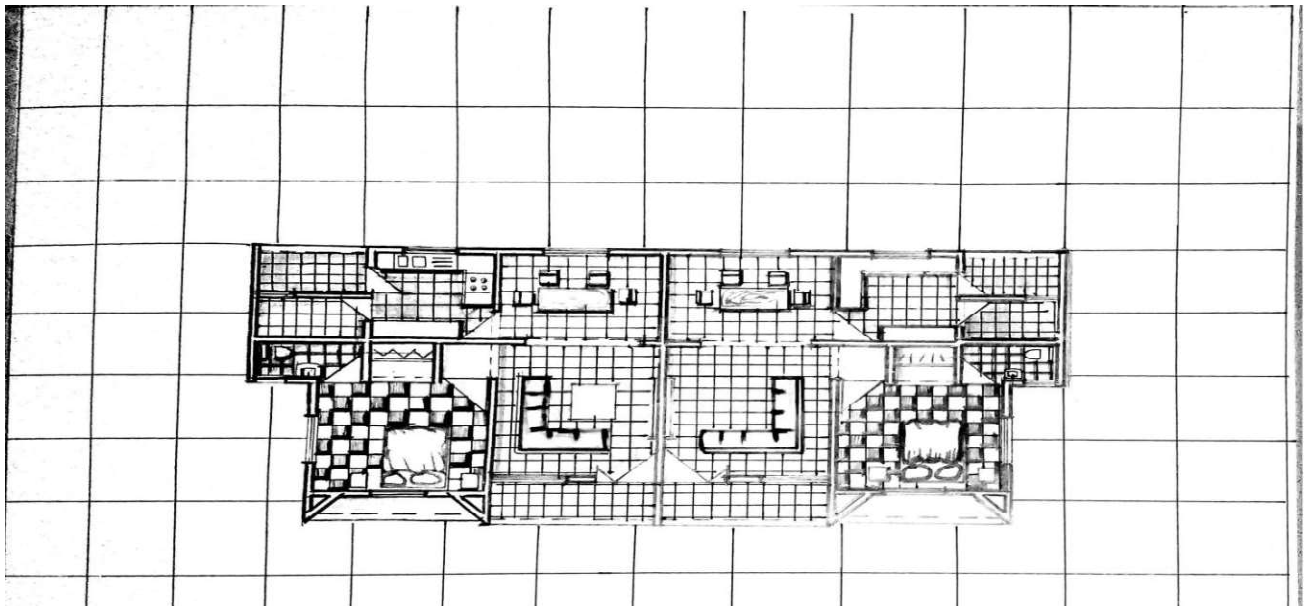
APPENDIX 7: BUBBLE DIAGRAM



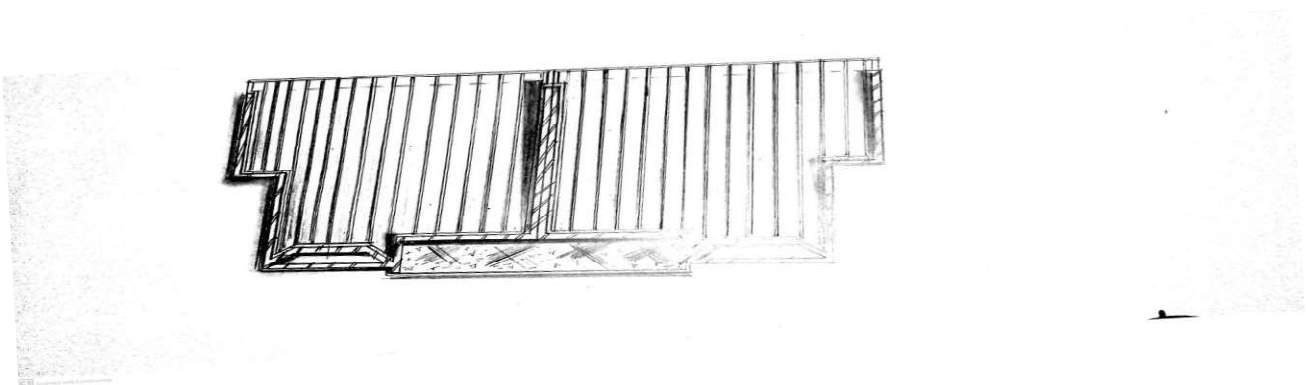
APPENDIX 8: CONCEPT DIAGRAM



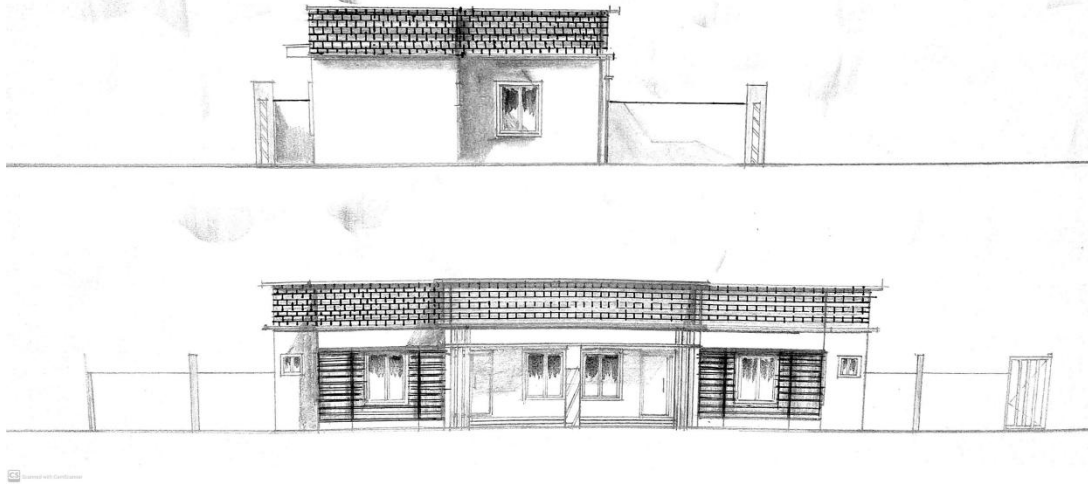
APPENDIX 9: SITE PLAN



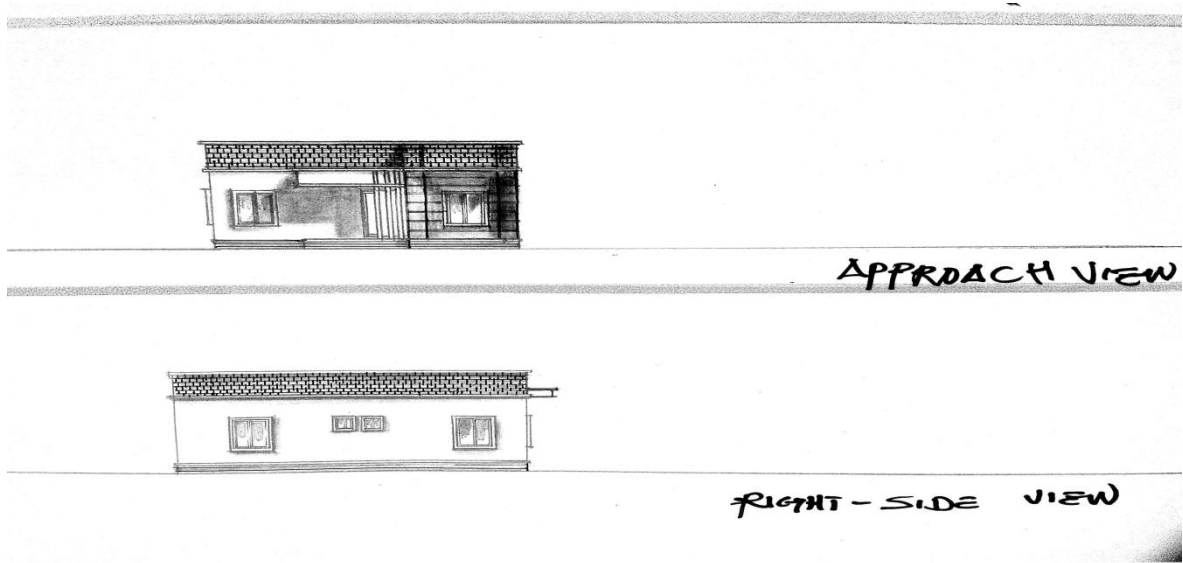
APPENDIX 10: FLOOR PLAN ONE BEDROOM SEMI DETACHED



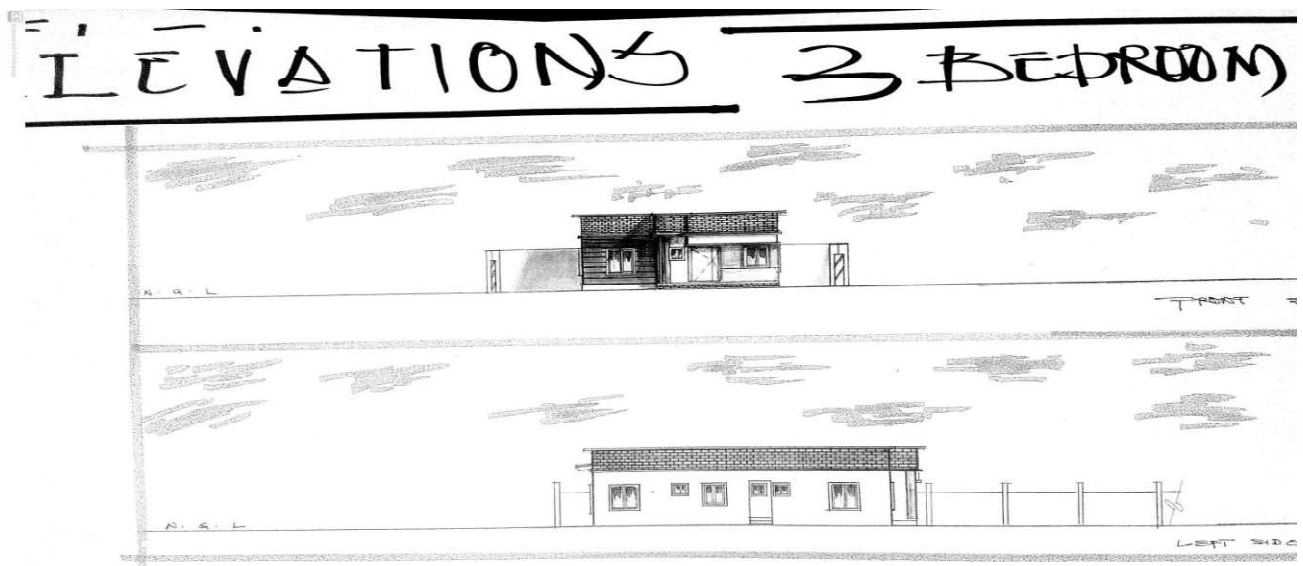
APPENDIX 11: ROOF PLAN ONE BEDROOM SEMI DETACHED



APPENDIX 12:ELEVATION FOR SEMI DETACHED 1 BED ROOM BUNGALOW



APPENDIX 13: ELEVATION FOR TWO BED ROOM BUNGALOW



APPENDIX 14: ELEVATION FOR THREE BED ROOM BUNGALOW

