HOUSES FOR CHANGE

Design approach

Site chosen: The proposed site is the waterfront of Makoko community. This site was chosen for reasons such as its proximity to water, its location in the city of Lagos which is an area almost smack between the mainland and the Lagos Island. In the past couple of years there seem to be a lot of people interested in this area, the government inclusive, because of this core location on the mainland. There is currently a project by NLE to provide floating houses and schools on the water but there needs to be consideration that this location could spring up a beautiful waterfront development proposal, as it cannot remain a slum and be the main access from land towards their proposal. Features of the site include; prone to flooding, currently occupied by shanties etc. This site is a prime location for this type of development because the water provides jobs for the people, i.e., fishing and timber curing, which is the occupation of a lot of the current inhabitants of the site. The site is also bounded by two markets, a plank market inclusive, so there is an opportunity for the inhabitants to be traders as well.

Prototype concept: The guiding principle around the prototype was to maintain the typical Nigerian architecture idea which is to design around a courtyard. This has proven to encourage communal living and help in increase of ventilation for the spaces. The rear of the units face the courtyard so that they have a larger front area while piping and other personal activities can be done in the courtyard. Every prototype has a recreational area which adds to the sense of communal living.

Justification of project materials and building structure: The proposed materials for the buildings are; compressed earth blocks, timber and bamboo. These materials were selected because of their availability, because they are cost effective and because they suit the purpose

for the design by being lightweight and effective for cooling. These compressed earth blocks especially help keep the inside cool while it is hot outside and they store the heat of the day to be let out in the evenings when it gets cold.

Site planning: The site is planned and organized in such a way that it connects properly with the existing situation. The site has a clear access to the water both by foot and in a car. It is amazing how even the low income earners in this area believe that vehicles are assets and so it was important to provide parking spaces. These parking spaces would serve both the inhabitants of the area on land and water, as well as visitors to the area. All drainages are proposed under the walkways. Apart from the buildings there are open spaces and recreational areas which are of great importance in planning communities.

The structure of the building is such that it allows for airflow through the building even at the hottest periods in the tropics. The building is elevated on drums and this is a multipurpose system that serves as storage for rainwater, as well as a means by which the building can float when the area is flooded, which is often due to the location. The prototypes are designed with a modular system which allows for different variations in the housing types as well as allow for shops and offices to be incorporated, which is a common practice in that area.

Sustainability

- Energy efficiency

Cooling and ventilation: Prototype has been designed to allow maximum airflow in the building while reducing direct impact of sun rays into the building to reduce its heat gain. Casement windows and louvers at the top of external walling to allow full air flow eliminate

the need for cooling devices. These openings are fitted with netting to prevent unwanted pests.

Passive solar design: Roof overhang fully extended to shield the building. Predominant building materials which include compressed earth blocks, timber and bamboo help keep the interior of the building cool.

Power supply: The major source of power in Nigeria is through the mains but this is not constant. Residents have to find means of alternate power. There is provision of solar panels on the roof and its motor which will be used to provide energy to basic required items like light bulbs and electric sockets to power everyday electronics.

- Water efficiency

Rain water collection: Lagos experiences and average rainfall of over 400mm in its rainy season. The design incorporates a rain water harvesting scheme where each unit has an additional source of water in cases of inconsistent supply from mains. Water is collected from the roof and stored in the drums at the base.

Waste water collection: The gray water system is used to collect the gray water only from showers, washing basins. Gray water is then filtered and supplied to be used for minor household chores.

Flooding: This proposal is for coastal regions. The building is elevated from ground level to prevent entry of ground water into building and additional plastic drums can be introduced in its base in places prone to heavy flooding to enable the building to float in such circumstances.

- Solar impact

Majority of the glazing in these buildings is on the courtyard side of the building and so the occupants are protected from the disadvantages of glare and can still get maximum ventilation as well as natural light; day lighting.

Business plan

- Materials sourcing/ construction methods

All materials proposed can be obtained locally eliminating the energy used in material transportation. Labor for construction can be gotten from the community members because it does not require major technical know-how, and serves as an opportunity for job creation. These include;

Compressed earth blocks: This is used as the main support of the building. It is the wall divide between each unit and serves to support and transfer the building load. The wall system is dry stacked interlocking blocks eliminating the need for wet work, formwork. It is a prefabricated building component creating faster of site assembly. (This method is adopted from S.B.I.E, Systems Building for Industrial Empowerment, which is an appropriate technology Systems Building for sustainable industrialization in a developing economy, developed by Professor Olumide Olusanya, Department Of Architecture, University of Lagos, Nigeria.)

Timber: These can be gotten just adjacent the site. Panels and frames are prefabricated into standardized sizes required by the prototype. These are low cost with ease of construction and erection

Plastic drums: recycled drums are obtained and customized to suit the purposed of rain water storage and supply to the building.

Bamboo: this is an abundant material in this region. Bamboo requires only 1/7 of the energy to create concrete and 1/50 the energy required for processing and is also a lightweight material. It is proposed in this project as roof support, railings, terrace support and whole bamboo as reinforcement.

Budget

A typical prototype includes: 8 one bedrooms, 6 two bedrooms, 6 three bedrooms making a total of 20 units and a recreational space. The buildable area of this on site = 620sq. m

ITEM	DESCRIPTION	COST ESTIMATE	% from total
1.	Substructure; Foundation footing, earthworks	1,400,000	22
2.	Superstructure; Wood works, bamboo, CEB, windows, doors, drums, finishing	2,586,000	41
3.	Mechanical/electrical works; Water storage and filtration system, piping, wiring, solar cells system	540,000	9
4.	Roof works; Roofing, bamboo	1,760,000	28

Total: =N= 6,286,000 equals approx. € 28,900

*costs will be reduced for prototypes in areas with little flooding where the need for extra drums and one-way detachable valves for the water systems would not be required.