

DESIGN PROCESS

The design process demonstrates the most effective approach to reaching a final product through exploration of the design principles, context studies, precedent studies and, finally, building design. The process aims to articulate methods to be integrated in the building design in order to respond to the requirements of the clients, site context and National Building Regulations. Design process will be followed by design principles, design concept, design development and design response.

DESIGN PRINCIPLES

Good quality social housing projects are based on certain design principles, in relation to the socio-economic issues existing in the specific targeted community. To achieve a good quality project, the social housing programme must draw on principles that accommodate the requirements mentioned above. The principles are focused on affordability, sustainability, security, safety and the needs of the specific target market. On the other hand, it also focuses on the integration of building orientation as well as urban and site context. The building deals with appropriate density for certain types of future users, function, aesthetics, material choice, mechanical systems, natural energy resources and unit size.

Affordability

This project is for people who earn between R 1500 to R 3500 monthly. Therefore, families will spend between 25% and 30% of their income on rental from R450 to R875 per month. The funding is subsidised by Government through the housing programme and managed by the Social Housing Institute. Affordability relates to the target market for the quality of the project. Affordability must balance with design in such a way that users should be able to afford rental fee and the Institute should be able to produce, manage and maintain the environment in an appropriate condition.

Sustainability

Sustainability is the key to maintaining the project in the long run. The Social Housing Institute acts as management for the project.

Residents, as users, have a commitment to maintain the safety and security of the environment, the quality of the building as well as a good relationship between both parties involved and between the users.



Figure 5.1.2.1
(The Social Housing Foundation, Issue 4, 2005:1)

Target Market

To satisfy the needs of a specific community, design integrates all of their unique needs. The management of the project must be in touch with future users so as to best assist the residents.

Safety and Security

Safety and security is one of the main challenges in social housing projects. Fences, security cameras, alarms, building orientation and resident's participation are methods to be used to combat this problem. All these methods have an impact on the design concept. In addition, the residents have an obligation to supervise the children and share community infrastructure.



Figure 5.1.3.1
(The Social Housing Foundation)



Figure 5.1.4.1

Urban Context

The environmental design integrates the particular building design within its urban context, creating better spaces for living. Each area has its own environmental context that expresses culture, history and people's customs. People develop ways of living that correspond with their income and needs. The proposed new development has to integrate the characteristics of the existing environmental context and lifestyle habits of the future residents. The living environment has to provide for the community's needs and facilitate their activities on a daily basis. Public transport, education, commercial activities, communal spaces and interaction facilities for children and adults all need to be integrated into the design. The proposed building also has to relate to the existing urban context to complement and improve the quality of the area. This means that the building must be designed in accordance with street access, existing buildings as well as existing activities and facilities in the area.

Implementing these criteria means that the building will fit on site, and respond to the needs of the area, making it a unique environment for good living.

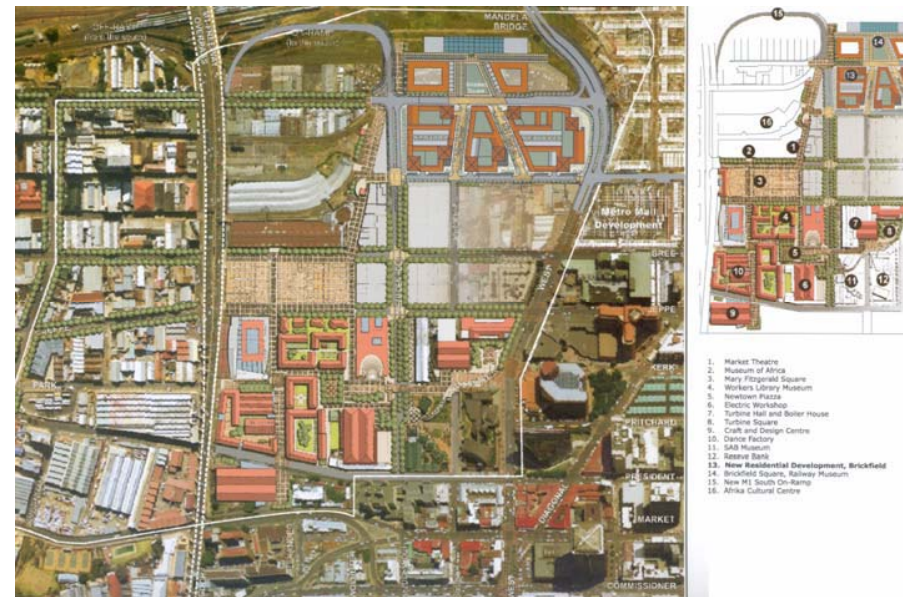


Figure 5.1.5.1

(The Social Housing Foundation, Issue 6, 2005:4)

Site Context

The site helps decide the building foot print and design context in relation to its surroundings. It defines the building orientation and the user activities. The relation between the site and the city plays an important role in deciding on the design concept. The proposed site has to be allocated in an area where facilities for this type of project are provided. The site has impact on the building costs. However, the topography has to provide appropriate soil, with service connection facilities. The building design must be oriented according to:

- Street activities
- Building function
- Density
- Site access
- Public transport routes as well as pick up and drop off points
- Public facilities, such as toilets and phones
- Shops, clinics and recreation facilities
- Safety

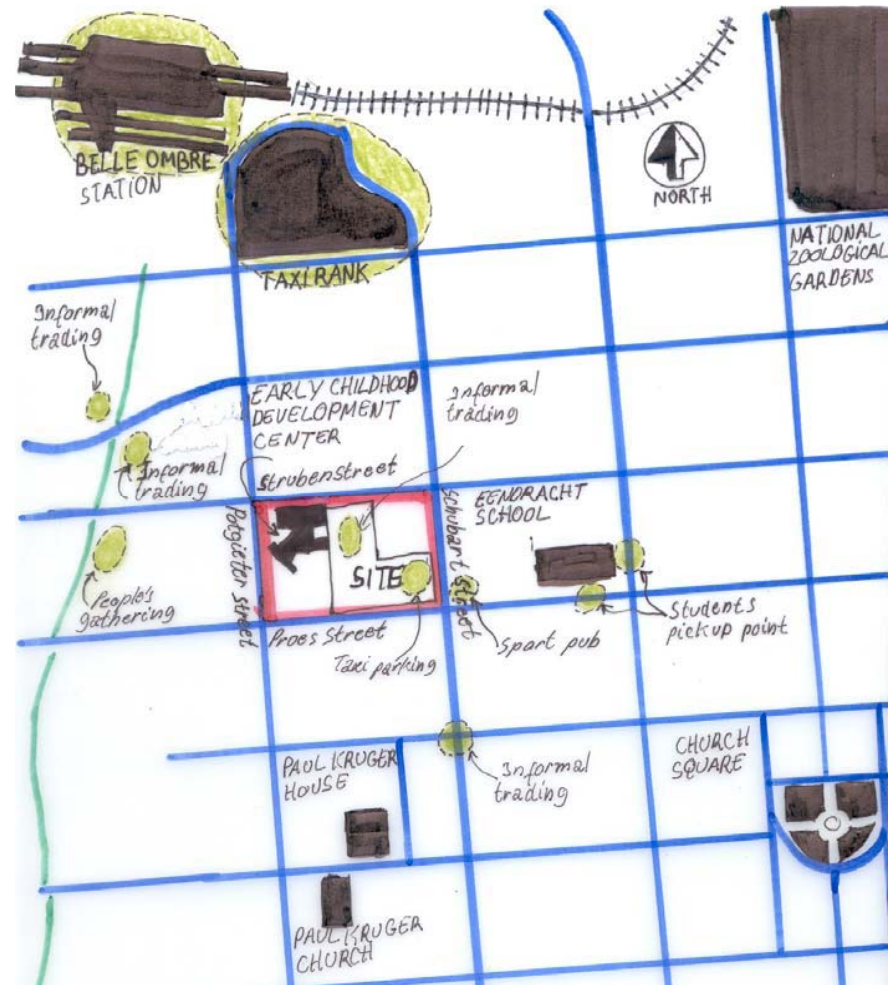


Figure 5.1.6.1 Social network

Design Context

The design of the building must respond positively to the demands of the residents in relation to its urban context. Communal spaces and green areas are the focal point of community interaction. The spaces have different sizes for different purposes. The spaces are designed to reflect the lifestyle of the residents, thus providing a feeling of ownership.



Figure 5.1.7.1

The Building

The building has to relate to the density requirements of the site context. The design integrates small unit sizes. Height is directly linked to density. In urban areas the building height should relate to the height of the surrounding buildings. The children's play areas are placed in a safe area so that adults can supervise easily. Parking bays are provided per certain square meterage, but not for all units. The chosen materials must be affordable and easy to maintain in the long term. Services are shared between units, with bathrooms and a kitchen next to each other. Natural environment plays an important role for the use of passive energy and water collection. The buildings are designed taking into account the North orientation to capture and control the sun's heat and light.

The Unit

To make the unit affordable its size has to be small. However, this does not mean that the housing unit cannot be well designed and function well. Design of the units allocates rooms with enough space to accommodate appropriate circulation and functions. The kitchen, living and dining rooms are the spaces where people circulate the most. Therefore, these rooms are linked without any wall division, increasing space. The unit has to be flexible so that circulation can be effective for easy access without compromising furniture orientation or the circulation of people. The living and dining room can also function as a study or an extra sleeping area for visitors. The washing lines are allocated to specific areas. This area can be supervised by both security guards and the residents. The finishing is low cost and has a long life. The floors are tiled, which allows for easy cleaning.



Figure 5.1.9.1 The proposed unit types

DESIGN CONCEPT

The design concept is a key so that the building realises the design principles that have been conceptualised. The building design is derived from the positive elements of informal dwellings in townships.

“Shacks are the beginning of unique cities.”

(South Africa Institute of Architecture, 2007: 55)

In informal settlements the construction of the dwellings is based on needs income and materiality availability. This typology doesn't take into consideration the urban context rather grows organic within its locale following the needs demands and requirements of the users. Completely disregarding the human comfort into consideration, with the spaces thus created forming from an “organic” random pattern. Resulting in an amalgamation of materials structures spaces to put together to what we refer to as informal settlements and or townships that are usually overpopulated with the sanitary and hygiene levels at a terrifyingly low standard.

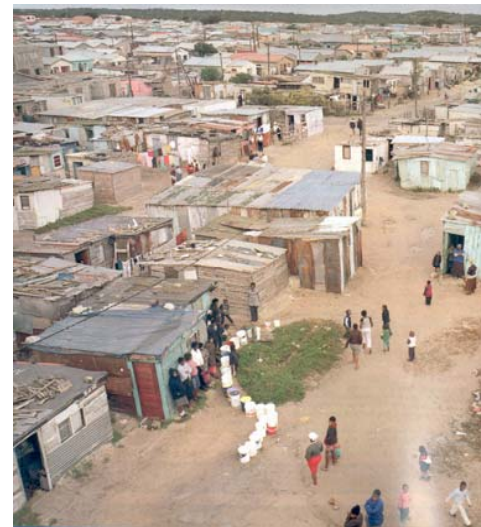


Figure 5.2.1

(South Africa Institute of Architecture, 2007: 54)

However, the high density, multiple access routes and gathering areas create and recreate a unique identity, a sense of community and peculiarity that contributes to some of the few positive aspects of space making within these settlements and or townships.

Within this context focal points are created and become centres for socio-cultural expression and growth. These areas tend to be and or are located at water collection points, spaza shops and the local shebens. These areas subsequently become points of communal gathering identity and interaction, allowing for a cultural and social dynamic to generate a sense of community integration and interaction, something that is lacking within the more formalised suburbs. Taking these aspects into consideration the design attempts to suggest a spatial framework within the urban context that exhibits these qualities while allowing for the formalisation of these living hubs and providing within them the essentials for human comfort and living.

A part of the design proposal is to take into consideration the existing activities in and around the site that will allow for a mixed-use context that would then aid in the design, planning and laying out of the various proposed focal points within the design in and along the identified site.

The proposed building is oriented along the north-south axis with proposed commercial facilities creating the interface with the street. This orientation allows for solar gains, where the bedrooms and living rooms are located. These are the spaces where people spend most of their time when indoors. Services such as ducts, fire protection and horizontal and vertical circulation are placed on the South side of the buildings. The complex is designed in order to allow for interaction between units by providing communal spaces. The units are designed to be similar, in order to have a consistent aesthetic feeling. Corridors and staircases become social spaces. To avoid overcrowding along the vertical and horizontal circulation routes, communal spaces are provided next to the staircases in the building that has the most housing units. The routes are open to increase natural light and cross ventilation.

The landscaping of the communal space was designed to create varying degrees of private, semi-private and public space. The spaces are defined by the use of plants for each unit and the use of different materials and floor surface changes from paving to grass. The site is also surrounded by one-way roads which provide access to the site from the CBD facing south. The existing office buildings and private parking are situated on the East side. Access for the residents is allocated on the North side and on the East of the complex access is meant for people who want use parking facilities.

DESIGN DEVELOPMENT

Design development plays with articulation of the building orientation, spaces and functions in different development stages to accommodate appropriate layout.

Ground floor

Public movement occurs frequently along the streets. Retail services and public services such as public phones and toilets are located on this level. This level promotes diversity of commercial activities throughout the building, which encourages the public to engage with it. Inside the complex, the ground floor level is dominated by flat units together with education, recreation and washing facilities. On the North-east side, the education facilities are separated from the community area by a security gate and fence. The area accommodates facilities for members of the public that want to take advantage of it.



Figure 5.3.1.1 Proposed ground floor layout

First floor

The building along East Street is dominated by a restaurant and office facilities. The rest of the buildings are made up of flat units and washing lines.

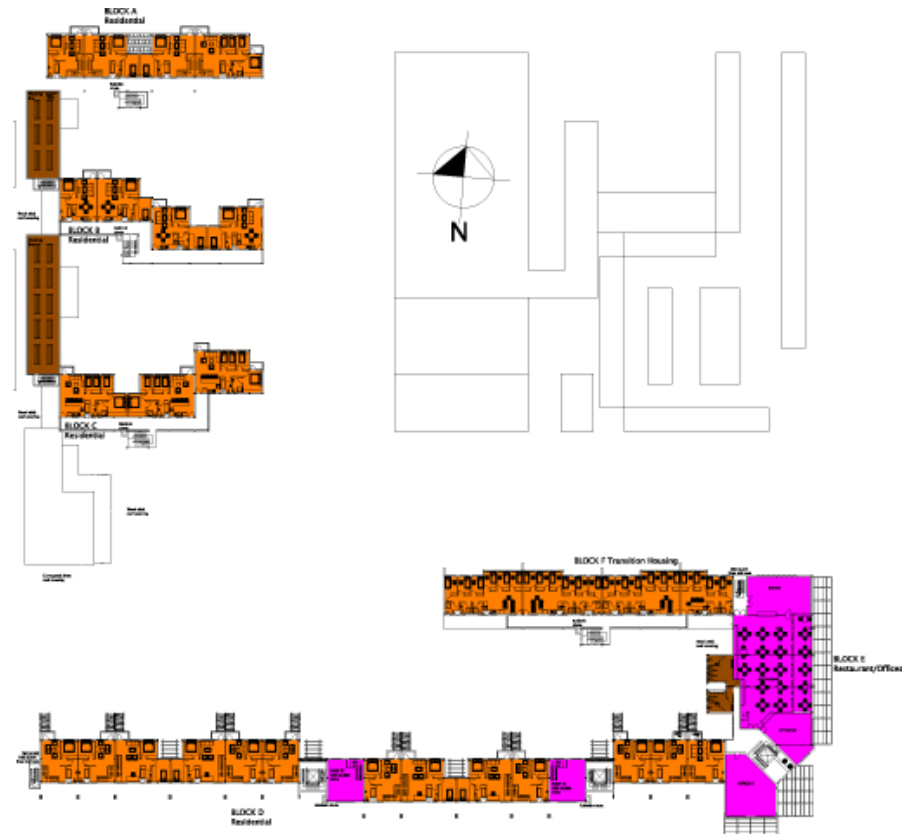


Figure 5.3.2.1 Proposed first floor layout

Second floor and above

The level is composed of flat units which continue through to the upper floor. The East building is the only one that has office facilities right up to the upper level.



Figure 5.3.3.1 Proposed second floor layout

Model 1

The first concept was to accommodate the existing activities on site. After finding that a portion of the site has been given temporarily to the Taxi Association by Pretoria Municipality due to a lack of taxi parking facilities in town, the layout had been changed.



Figure 5.3.4.1

Model 2

The building layout concept was to create a large communal space and block the North-east building due to its degraded state, which attracts unsavoury activities. However, the orientation did not work as the space created between the buildings was not enough to maximise North and East sunlight.



Figure 5.3.5.1

Model 3

The aim of the layout was to maximise North and East sun radiation. The buildings allocated on the East side were moved to the West side of the site. The proposed North-east building was moved back. Therefore, the new layout created efficient spaces, increasing light penetration and communal spaces. The horizontal circulation on ground floor was not well designed. The main communal space could not link to diverse activities.



Figure 5.3.6.1

DESIGN RESPONSE

Currently the area of the chosen site does not have enough commercial activities and facilities to satisfy the needs of the residents. However, the proposed development will respond to the needs of the users through implementation of the appropriate facilities.

The traffic movement and communal interaction on the proposed site are reflected in the building design. The shops, restaurant, offices, public toilets and phones facing the streets create the facilities that the proposed building offers to users. The façades communicate the building function and category of the users. The function of each level is defined by the design and material used on the façades. Services are provided in proximity to living spaces in order to accommodate affordability



Figure 5.4.1 South elevation of the proposed building

Social Amenities

Communal space is one of the tools used in designing the social housing concept. It promotes social gatherings between families with different backgrounds. This tool will encourage families to become a community, and to work together for a better living environment where spaces are defined as private, semi private and public. Therefore, the spaces have different communal functions. Due to the small size of the units, the communal spaces provide outdoor rooms as an extension of the units for moments when families receive visitors. Meanwhile, outdoor rooms contribute to security, as it encourages outdoor activities. On the commercial façade the building provides space for billboards and diverse commercial activities such as restaurants, shops and pubs along the streets.

Benches under the trees are provided in communal spaces around the children's play areas, sport facilities and the communal meeting area. A braai area, green spaces, a gymnasium, a crèche, a study room and Internet facilities provide for communal interaction. The crèche is only for residents. It will be supervised by adults. The services will be paid for by the parents to the service provider.



Figure 5.4.1.1 Section illustrating communal spaces between the buildings

Landscaping

Landscaping has been designed with different materials to define different spaces. Paving bricks are used to define pedestrian circulation and also leads the residents to their destinations. Grass defines open space between walkways and private spaces. Plants are used to demarcate private spaces between flats and open spaces.

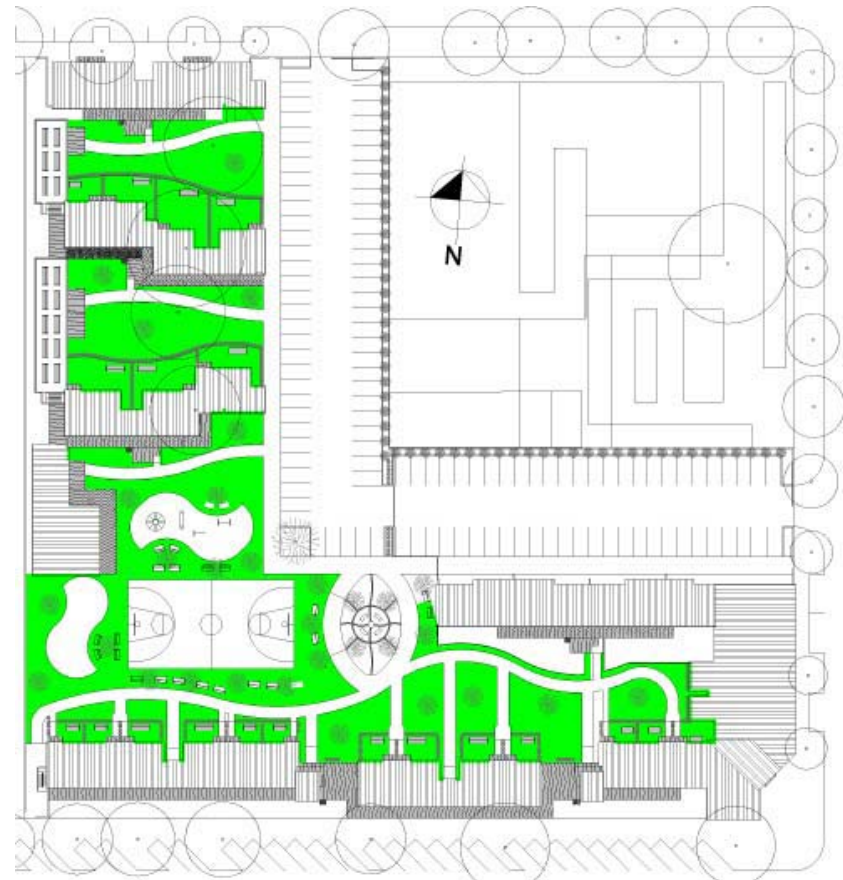


Figure 5.4.2.1 Landscaping layout

Washing Lines

The units do not provide laundry areas. Instead laundry areas are located between the buildings on the West side of the site. Wash trough areas are situated between the study, gymnasium, and crèche. Washing lines are placed on top of the gymnasium and study room due to the height of the building, which maximises sun heat gain. It is also for security purposes and avoids long walking distances with loads of washing. People can supervise their washing from the floors above through the openings and horizontal circulation.

Parking

The parking area is divided in two parts, with one for residents and the other for rental to the public during work hours. The rental and residential areas are divided by a security gate to which only the residents have access. Most of the parking bays are designed to be as close to the flats as possible for security and distance purposes.

Security

The building is separated into residential and commercial areas. The flat units access through the communal area, while residents have access through the communal area to some of the commercial facilities. The boundary along the West side of the site is secured by a 2.5m high boundary wall with 0.5m electrical wires on top of it. There are two access points to the premises. Both of them have a gate for pedestrian and vehicular traffic. These access points are monitored by both security cameras and an intercom. All residents have access to these electronic communication devices. Visitors can access the premises by permission of the residents through the security guard. The study and gymnasium facilities are also monitored by security guards. The rooms are supplied with security cameras. Those who want to use the facilities have to request an access key from the security guard. The complex complies with fire regulations. Signage will be used for easy orientation.

Refuse

The spaces under the staircases are used for the storage of refuse bins on the ground floor in order to avoid wasting space. Each floor has access to refuse bins through a rubbish chute. The system aims to reduce travelling long distances to dispose of waste, and avoid the unpleasant smells of waste placed next to unit doors. The refuse bins will be removed by people who are responsible for the cleaning of the complex and moved to the refuse yard. Afterwards, refuse will be collected by the Council.

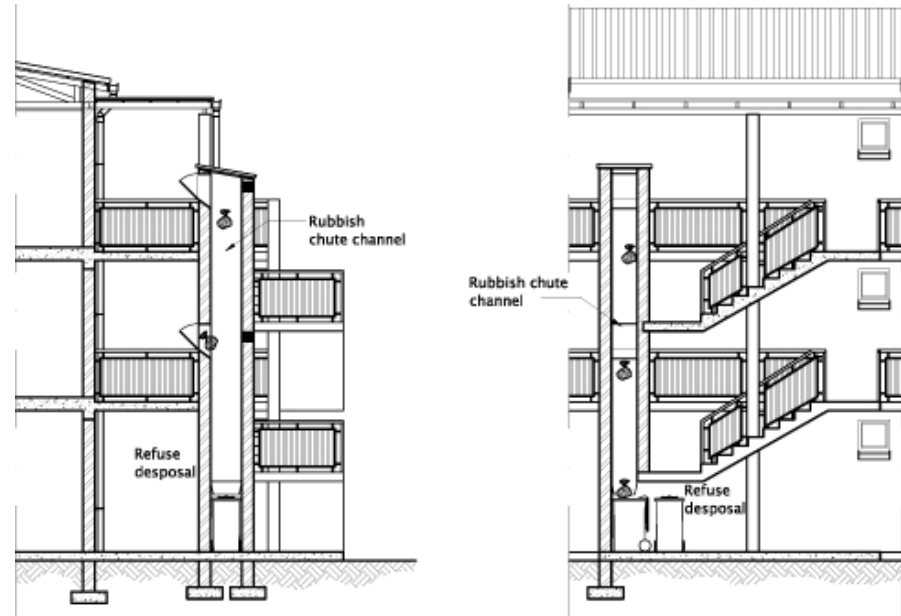


Figure 5.4.6.1 Section of rubbish chute