

## BASELINE DOCUMENTATION

The proposed project is committed to create sustainability, by making it both affordable and durable. It will provide suitable quality accommodation, services and facilities through design concept and sustainability methods.

In the architecture concept, sustainability is used as a tool of building design which applies the most appropriate material choices. The dominant natural resources are natural climate, vegetation and mechanical (solar panels, green house effect and water harvesting). These have been used in the building design to reduce consumption of energy and water.

Design, social, economic and environment issues are the aspects that need to be analysed and applied to provide sustainable development.

To make the project sustainable social issues will be analysed in terms of flexibility, accessibility and the necessary facilities to satisfy the needs of the users.

Economic issues will focus on local contractors, materials, labourers, existing facilities, site orientation and building construction regulation regarding the specific site.

The aim of the economic study is to reduce the project and maintenance costs.

Environmental issues will deal with natural energy and pollution to create an appropriate place to live.

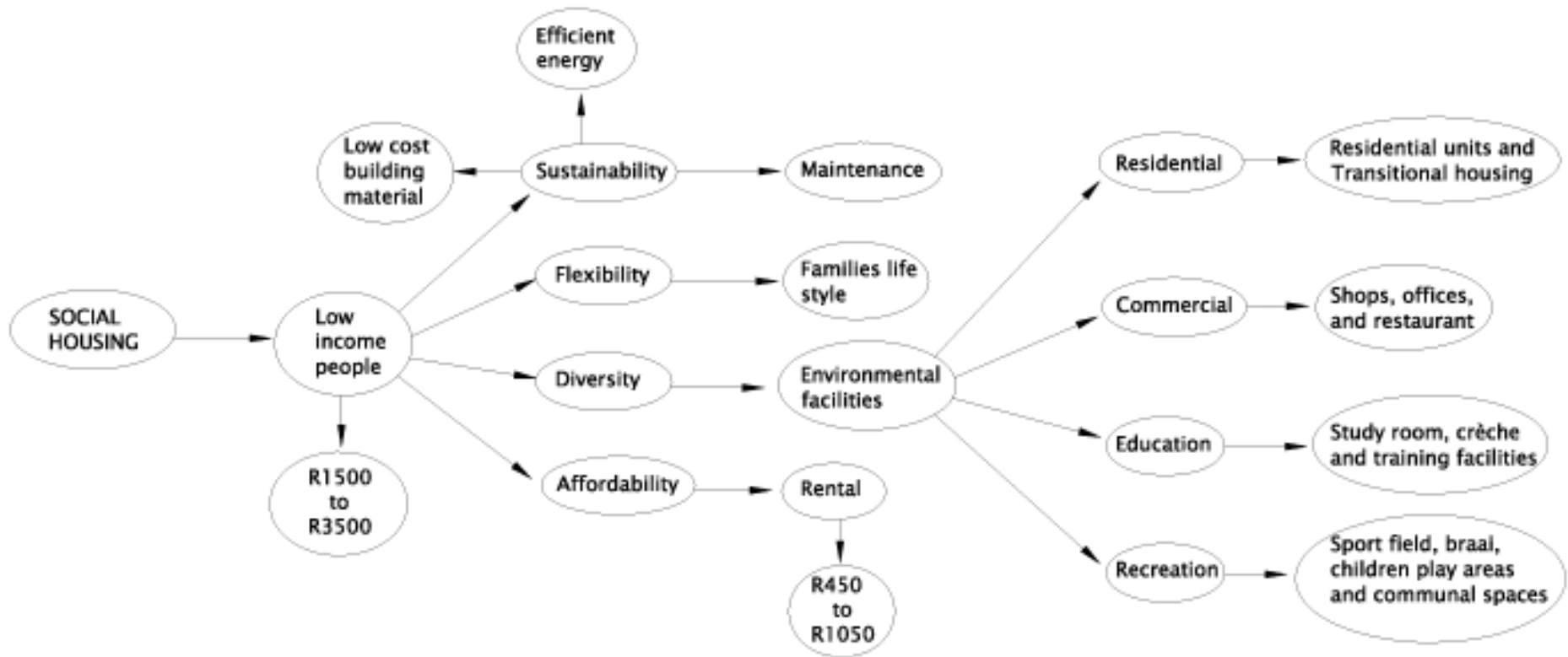


Figure 3.0.1 Concept diagram

## BRIEF

The project aims to propose better quality housing for low-income people. It provides sustainability, flexibility, diversity, and affordability, where people can live close to their work and school, etc. The project also aims to propose a social housing principle as a guideline for social and economical programmes that will uplift the disadvantaged communities by improving their income and lifestyle. The proposed programmes will be divided into two periods: the first into 8 months and the second into 5 years.

The programmes established by the proposed project aim to train people to reduce lifestyle costs and increase financial growth. The training programme of 8 months will allow people to gain knowledge that will improve their business skills and the necessary skills for living in a community. After financial growth and skills training in the proposed period they will move out and live on their own.

The programme will be monitored at the Social Housing Institute in such a way that in 8 months and 5 years time the residents will be able to leave the project, and find alternative housing. They will be better able to sustain themselves and the project will then recruit other families. The programme is for people who live far from their work in the Pretoria Central Business District and are earning between R1500 and R3500a month. They will be living within rental criteria of between R450 to R1050 a month in a period of 8 months to 5 years. It is a non-profit service. The building facilities will not be sold to any private companies or individuals. The rental charge from residential units and commercial facilities will be used to maintain the project.

## The client

The Matabane family is one example of disadvantaged people who live in a difficult home scenario. They live in a Reconstruction and Development Programme House (RDP) in Mamelodi Township, North-east of Pretoria. The family is made up of five members: parents and three children (a girl and two young boys). The father is the only member that has a permanent job in the Pretoria CBD. His monthly income is between R 2000 and R 3500. The mother is a homemaker and sells fruits and vegetables in the front yard of their house. The boys are still in primary school. The oldest girl has finished matric and could not continue her education towards University due to financial restrictions.



Figure 3.1.1.1 RDP housing with commercial facility (Hair Salon)

Figure 3.1.1.2 Example of a family selling good in the front yard



She runs a small plaiting business, also in the yard of the house.

Transport is available in various ways. Train, busses and taxies are the commonly available public transport, which have a different price from Mamelodi to town and vice versa. The route by train costs R13 and it is R18 for the taxi on a daily basis.

Mr Matabane travels to work by train every day. He spends R4.50 in the morning and R8.50 in the afternoon. Mr Matabane spends R286 on transport monthly. If he earns up to R3500 this means that he spends more or less 8% of his income on transport monthly.

## Financing

Funding will be granted by the Government through the low cost housing programme and managed by the Social Housing Institute.

## Management

The project will be managed by the South African Social Housing Institute. The premises will be supervised by some of the residents, who will be chosen by a body comprising all the residents, to deal with issues on a daily basis. To make the project run smoothly, the Social Housing Institute, resident community and other parties involved in it must be committed to the project.

The residential community representatives are responsible for the decisions made on behalf of the Social Housing Institute. They must act transparently between the parties in all matters in order to keep good relationships. The Institute will assist the community development projects, such as skills management training.



Figure 3.1.3.1



Figure 3.1.3.2

## PROJECT DEVELOPMENT

The project is conceptualised as a complex of social and transitional housing. It is made up of mixed-use high density residential and commercial housing as well as hostels. The complex is composed of building blocks of two to four storeys. Recreation facilities are located around the buildings. Shops and other commercial facilities are located on the ground floor along the street façade, and flat units vary in size from the first to fourth floor. The residential buildings mixed with commercial buildings, have two separate vertical and horizontal circulations, which are not disturbed by one another. The vertical and horizontal circulation will be provided on both areas. An open plan design will be integrated to accommodate the required space for different tenants.

The main entrance will face the Northern side of the site. Play areas for children will be surrounded by the buildings in such a way that parents can monitor them from the flats through the windows and balconies. Shops and other commercial facilities will face North, South and East due to existing traffic and pedestrian movement. Public phones and toilets will be integrated in the building design to satisfy the needs of the users.

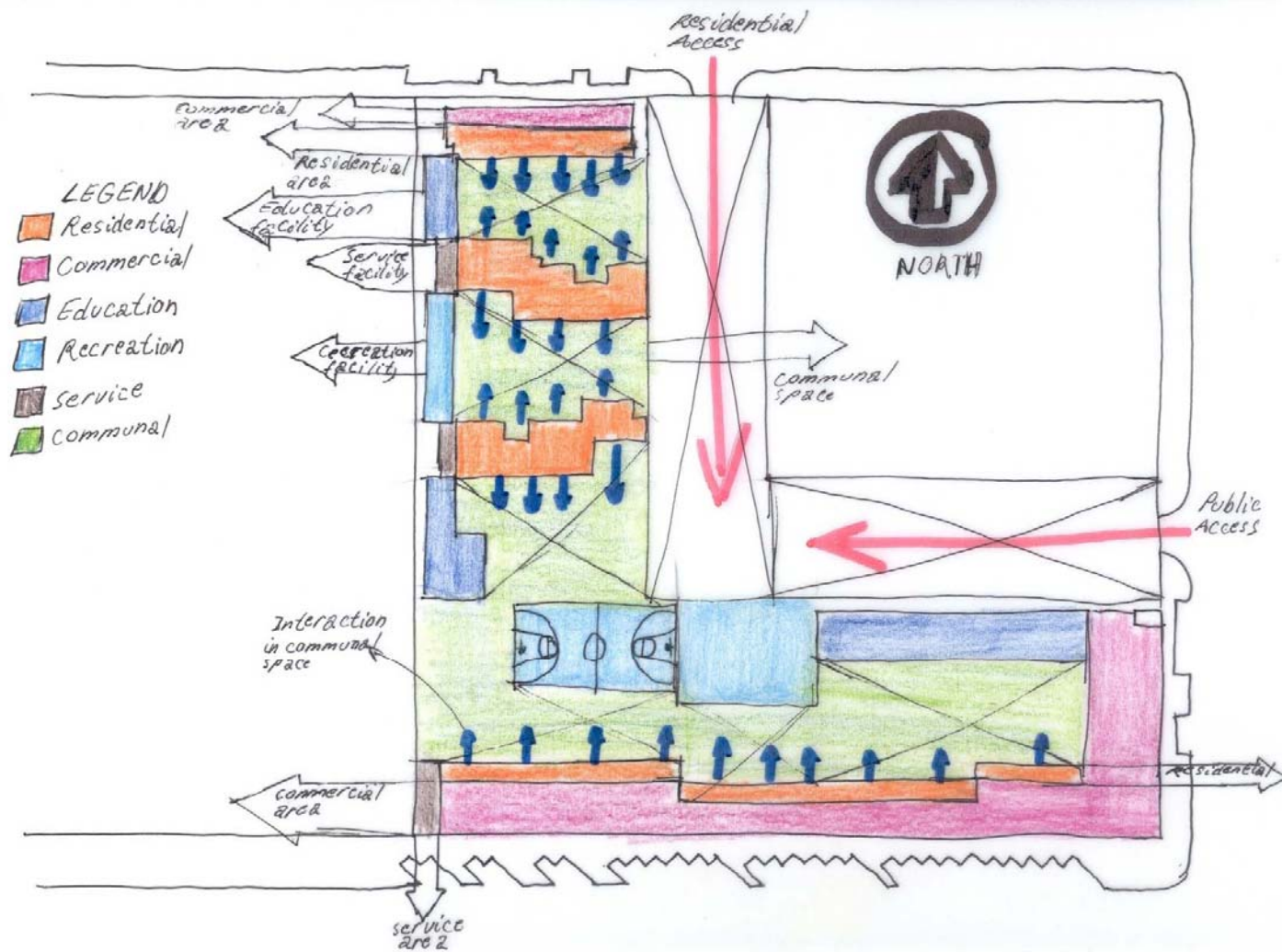


Figure 3.2.1 Plan layout



## Project composition

1. **Residential:** Social and Transitional Housing.
2. **Educational:** Crèche, Library, Study room, Training facilities.
3. **Recreation:** Sport field, gymnasium, Braai area and communal spaces.
4. **Commercial:** Shops, Offices and Restaurant.

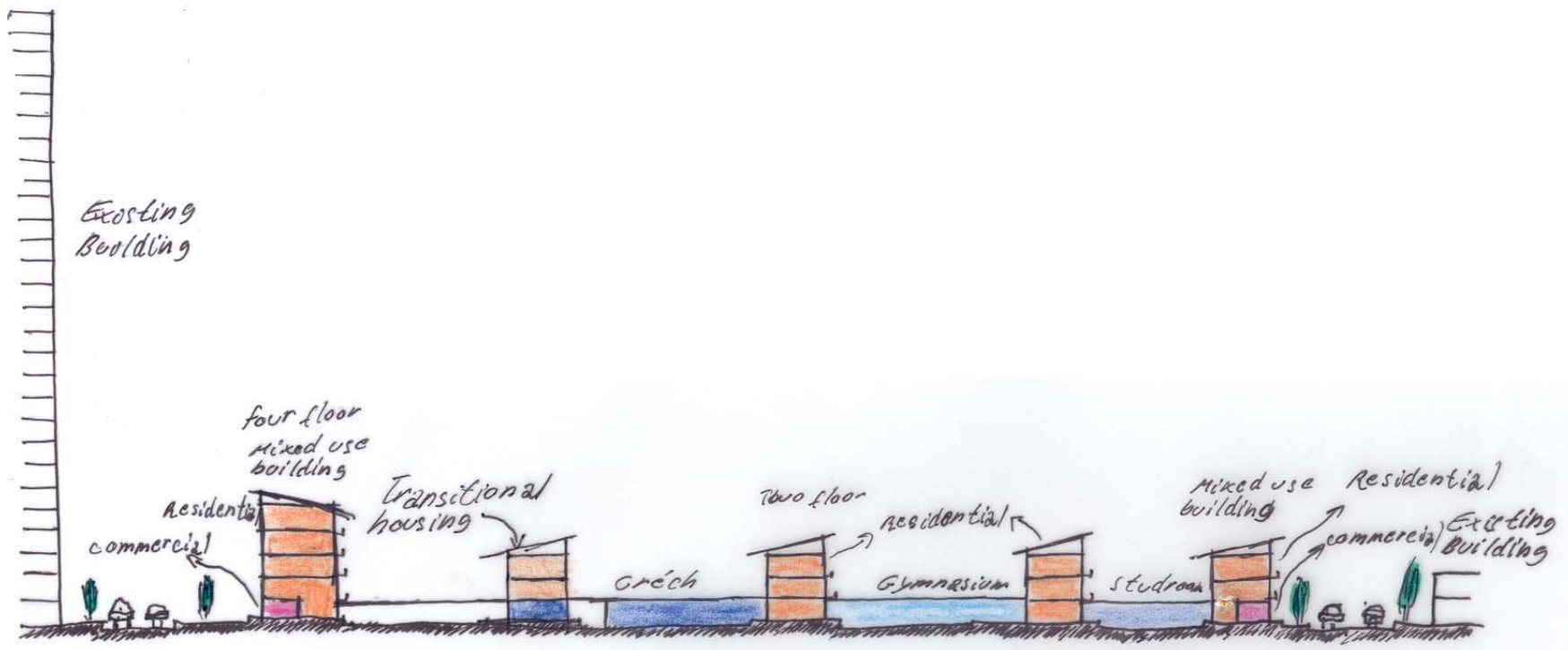


Figure 3.2.1.1 Section illustrating function in the building

## Residential

1. **Ground floor:** 1 to 2 bedrooms (Block B), 3 bedrooms (Block C).  
**Double volume:** 1 to 3 bedrooms (Block A), 1 to 2 bedrooms (Block D).
2. **First and second floor:** 1 to 2 bedrooms (Block B), 3 bedrooms (Block C).  
Hostel 4 to 6 bedrooms (Block F). (Ed: check formatting)

## Education

1. **Ground floor:** Training facilities (Block F) with 2 classrooms, library, computer room, kitchen, filing room, reception, office and meeting room.  
Study room (Between block A and B).  
Crèche (Between block C and D).

## Recreation

1. **Ground floor:** Sport facilities (soccer field and basketball court).  
Gymnasium (Between block B and C).  
Braai, green spaces and fire place.
2. **First to fourth floor:** Communal areas (Block D).

## Commercial

1. **Ground floor:** Shops (Block A, D & E).
2. **First floor:** Restaurant and offices (Block E).
3. **Second to fourth floor:** Offices (Block E).

## Chosen Site

The site context plays a very important role in sustaining this type of building.

This particular area of the city contains a School, Government services, Commercial activities, Museums and Offices. Also, the proposed site is far from the noise pollution and activities of the Central Business District.

The existing potential on site will be integrated in the design concept in order to improve upon the existing activities on the site.

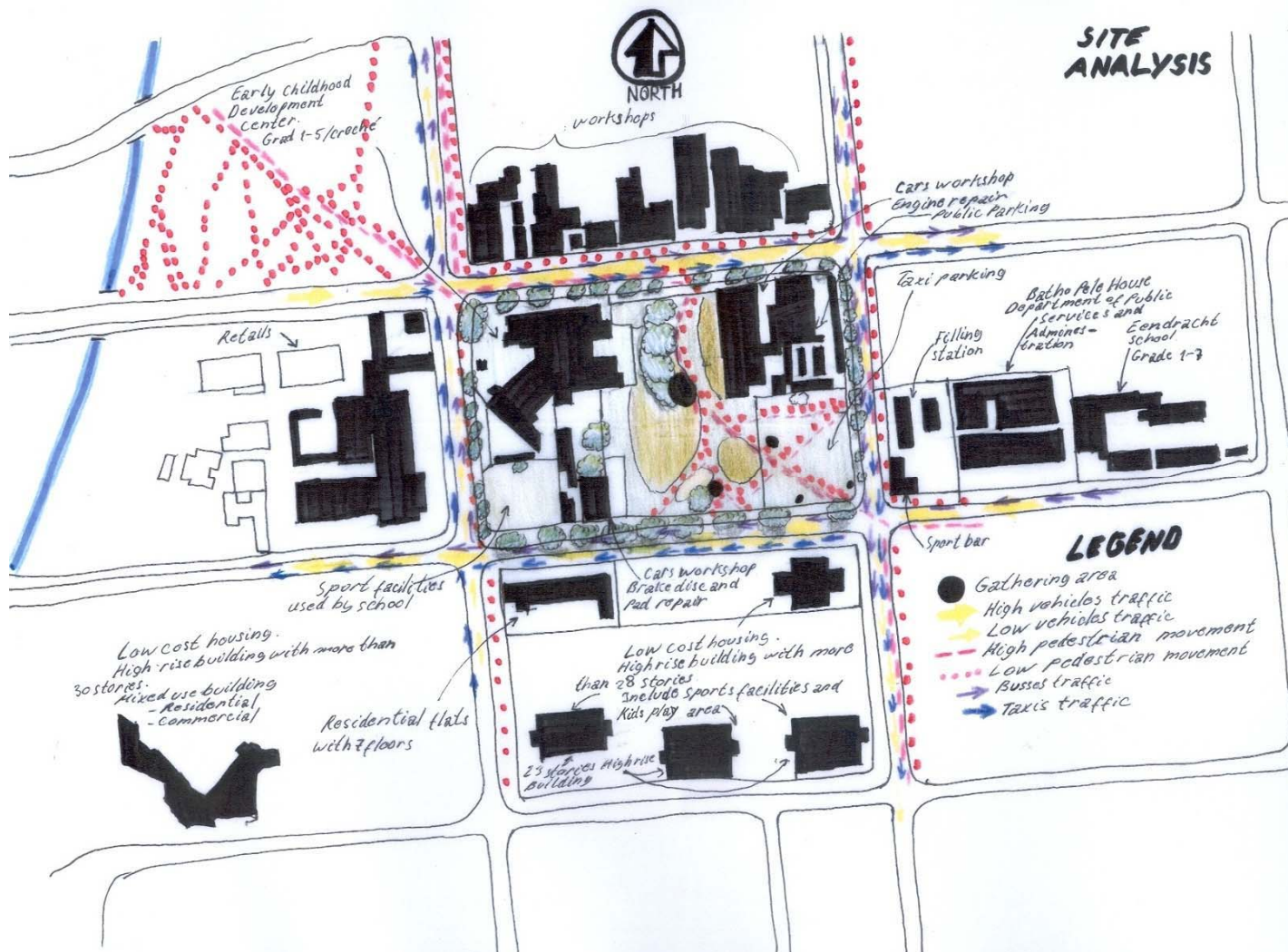


Figure 3.2.2.1 The existing facilities around the site



Figure 3.2.2.2 Car workshop and retail facilities on North side of the site



Figure 3.2.2.3 Felling station, Sport bar and Government building on East side of the site



Figure 3.2.2.4 Residential buildings on South side of the site



Figure 3.2.2.5 Residential building on South-west of the site



Figure 3.2.2.6 Retail facilities on West side of the site

## Vision of the project

The proposed project is a channel to uplift the economic growth of disadvantaged communities in the area. By living close to work and close to other facilities such as education, health and recreation, the costs of transport and energy consumption will be reduced. The programme will cut down the cost of living and promote financial growth. To make sure that the project will work, the South Africa Social Housing Institute must train and monitor tenants in such a way that after they finish the programme they will be able to leave the project and live on their own so that other families can be recruited.

The project will also regenerate the North-west edge of the city, as facilities provided by the development will bring life to the area and encourage investors to develop the area, due to history facilities and business opportunities. Therefore, tender will be open only for small local contractors.



Figure 3.2.3.1  
(The Social Housing Foundation, 2005:13)

## ACCOMMODATION SCHEDULE

Function	Unit Type	No	Size
Residential	1 Bedroom	31	39m <sup>2</sup>
	1 Bedroom Double volume	10	55m <sup>2</sup>
	2 Bedrooms	19	53m <sup>2</sup>
	2 Bedrooms Double volume	6	73m <sup>2</sup>
	3 Bedrooms	9	66m <sup>2</sup>
	3 Bedrooms Double volume	1	83m <sup>2</sup>
	4 Bedroom	2	54m <sup>2</sup>
	6 Bedroom	6	81m <sup>2</sup>

Function	Unit Type	No	Total
Commercial	Shop Struben Street	5	127m <sup>2</sup>
	Shop Proes Street	14	447m <sup>2</sup>
	Shop (1st Floor) Proes Street	2	78m <sup>2</sup>
	Shop Schubart Street	4	284m <sup>2</sup>
	Office (1st Floor) Schubart Street	2	117m <sup>2</sup>
	Office (2nd Floor) Schubart Street	6	301m <sup>2</sup>
	Office (3rd Floor) Schubart Street	6	301m <sup>2</sup>
	Office (4th Floor) Schubart Street	5	340m <sup>2</sup>
	Restaurant	1	398m <sup>2</sup>

Function	Unit Type	No	Size
Education	Training Facility	1	301m <sup>2</sup>
	Crèche	1	164m <sup>2</sup>
	Study room	1	71m <sup>2</sup>

Function	Unit Type	No	Size
Recreation	Gymnasium	1	113m <sup>2</sup>
	Sports Field	1	420m <sup>2</sup>
	Braai	1	30m <sup>2</sup>
	Communal space A to F	6	23m <sup>2</sup>
	Meeting Room	1	10m <sup>2</sup>

Function	Unit Type	No	Size
Service	residential Parking	1	1381m <sup>2</sup>
	Rental Parking	1	1110m <sup>2</sup>
	Washing line Area	2	184m <sup>2</sup>
	Washing Tank Area	2	52m <sup>2</sup>
	Public Toilets Struben Street	1	4m <sup>2</sup>
	Public Toilets Proes Street	2	18m <sup>2</sup>
	Public Toilets Schubart Street	5	32m <sup>2</sup>
	Guard House Struben Street	1	10m <sup>2</sup>
	Guard House Schubart Street	1	8m <sup>2</sup>

## SOCIAL PERFORMANCE

### Occupant Comfort

The building design must provide a positive environment, in regards to the user's comfort and health, especially in the areas of the building where people spend more time during the day and night.

Natural daylight must be maximised in order to illuminate and regulate climate inside the building as well as reduce artificial energy consumption. Direct solar radiation will be avoided by the use of louvres or balconies that will serve as recesses during the winter season



Figure 3.4.1.1  
(The Social Housing Foundation)



## **Ventilation**

The building will provide natural ventilation through mechanic systems and the building itself will control airflow during the day and night in different seasons. Mechanical systems will be allocated in the roof and a wall of each room of the building. Windows, doors, and balconies on the North side and circulation areas on the South side of the building will allow for a system that generates cross ventilation and controls air flow.

## **Noise**

The site is very quiet. Any noise pollution comes from passing vehicles along the streets. Noise pollution will not affect the external or internal comfort zone of the building.

## **Thermal Comfort**

The building foot will be oriented in such way as to monitor suitable indoor temperatures, creating appropriate comfort zones for tenants and their visitors.

## **Views**

The site mostly allows views to the North. Views will be seen through windows and from balconies. Due to a high-rise building on the Southern side and double stories on the Northern side of the site, the proposed building will be located on the Southern side of the site to provide a better view to the North.

## **Inclusive Environment**

According to the South African National Building Regulations, the proposed building does not require any accessible facilities for disabled people. Commercial areas on the ground floor are accessible to disabled people, with a threshold between pedestrian paving and shops of 170mm. The restaurant and offices on the upper floor are accessible by lifts and by stairs.

## **Access to Facilities**

All access to facilities will comply with the South African National Building Regulations. Services, paths, roads, circulation and recreation areas will be designed in such a way as to not compromise access to privacy in those areas. The proposed design will create suitable space to prevent accidents in the children's play areas. Access views from the flats to the children's play areas will be through windows and from balconies where parents can monitor their children. Mail-boxes, public phones and Internet facilities will be provided in the building. Noise pollution as well as bad smells emitted from waste areas will be considered in the design.

## **Participation and Control**

The temperature and natural light inside of the building will be monitored by the tenants through mechanical system, adjustable louvres, open windows and doors, creating appropriate environmental spaces to live and work. Public spaces such as parking bays, recreation and circulation areas will be controlled by tenants in order to satisfy and respect their privacy. The spaces are designed to allow furniture to be movable at the wish of the tenants. Communal spaces are large enough to allow for comfortable social interaction. Therefore a braai space, a fire-place, sport facilities, a children's play area, a study room, a crèche, a laundry, and benches under the trees are all provided.

## **Education**

The building will incorporate a crèche, study rooms, a library, a computer room, a children's play area and classrooms as training facilities.

## **Health**

Rules will be drafted by the tenants' committee to provide a healthy living environment. The building will provide space to accommodate waste.

## **Safety**

The building will be provided a secure entrance, routes, and a secure perimeter and access control to prevent crime activities. Safety of the building will be monitored by a security guard. The building will allow for viewing of routes

## ECONOMIC PERFORMANCE

### Local Economy

Construction will be executed by a local small contracting company using local labour and material. The building materials will be supplied by the nearest suppliers.

### Efficiency

The building will be designed to be used on a daily basis. Various activities will be performed during the day and night. Recreation facilities will function during the day and after work hours to give the tenants a place to socialise and provide a comfortable and safe environment to live in. The flats' unit types will be designed to accommodate a specific number of occupants. Communication and entertainment services such as Internet access and telephone and television connections will be provided. The use of all spaces will be regulated and supervised by the management of the project.



Figure 3.5.1.1  
(The Social Housing Foundation, Issue 1, 2006:6)

## **Adaptability**

Through the implementation of an open plan, the building will be flexible and will be able to be temporarily or permanently extended without compromising the structure of the building. Spaces can be adapted for different purposes. Internal spaces and front façades along the streets can be reconfigured according to the needs of the tenants.

## **Ongoing Costs**

For building maintenance, all tenants must comply with the rules of the building, which will be decided by the tenants' committee. Income generated by the rentable shops and other commercial activities will be used to maintain the building in the long term.

For instance, photovoltaic panels, fluorescent light fittings and water harvesting will be installed to reduce water and energy consumption. The participation of the residents in supervising the premises will reduce the costs of security.

## **Capital Costs**

To reduce building construction costs, local contractors and other local companies in the construction industry will be employed. The building design will maximise on simplicity of the effectively scheme.

Capital costs will be allocated for accidents or problems occurring during construction and the implementation of sustainable design methods.

## ENVIRONMENTAL PERFORMANCE

### Water

Water is required for many functions in large buildings. Water supplied by the municipality becomes expensive due to the large number of users. To reduce water consumption, water harvesting will be used in the building. Rainwater will be collected from the roof, roads, paths, parking, and subsequently stored in a tank. Water will be treated so it can be used in toilets and garden taps.



Figure 3.6.1.1  
(The Social Housing Foundation)

## Energy

Due to insufficient delivery capacity from the electricity supplier, photovoltaic panels as well as natural lighting and ventilation will be availed of to provide efficient energy. The panels are part of the building design, allocated on places with maximum daylight absorption potential. This will be used for heating water. Balconies, windows, doors and mechanical systems will provide air-flow in the building to control temperature during the summer season. Direct sunlight and the mechanical system will provide heating during the winter season. Fluorescent light fittings are an efficient source of artificial light for this project due to their low energy consumption. Renewable energy methods are used in many buildings today. Sun, wind and waste material are harnessed, as they are renewable resources. But to integrate them in the building design, the resources must be analysed in relation to viability on site in order to perform effectively.

## Waste

To create a comfortable environment, waste must be separated into bins, one for recyclable materials and the other for waste that has to be dumped. Waste-paper, metal and glass can be sold. Leaves can be composted on site and reused as a fertilizer. Management of organic waste, brown and grey water will remain the responsibility of the city council of Pretoria.

## Site

The proposed site is a Brownfields site. It is not disturbed. Nothing has been built previously. Neighbouring buildings do not negatively affect the proposed building orientation, building access or sunlight capture. The site is flexible enough to share and relate with the surrounding buildings. The site is covered with a few trees. These trees can be removed from their original location and integrated into the landscaping design. The Pretoria Council has handed over the site temporarily to the Taxi Association due to a lack of parking in the CBD. The use of parking by taxis on the site has encouraged informal trading.

## Materials

All materials used in the construction process must be sustainable, flexible (in order that they can be recycled) and available in the local market with low embodied energy. It must also be based on materials used in the neighbouring buildings to maintain the neighbouring feeling. The materials are standard and produced by manufacturers to avoid damage to the environment.