

# TECHNICAL DOCUMENTATION



## The Building

The Art Centre is basically a low cost building. Thus, the use of standard components and construction details will be essential.

### Concept

The basic assumption is that simple construction works would be done by local workers, as part of a training process. Brickwork, steel work, plumbing and other basic components, could be “home made” elements, which achieve two aims: first, creating jobs for unemployed people and second, involving the community with the establishment of the centre from its beginning.

Using the scrap metal workshop as a main space for preparation, could be efficient for that purpose.

### Structure

A structure of load bearing walls is used in most of the centre’s components. Masonry columns with steel beams used to support roof overhangs.

All outdoor construction (shading etc.) consists of steel/brick components that demand low maintenance for the long term.

### Roof

The concept of the roofs is to have low pitch in order to create vast shaded areas while keeping

reasonable height. In addition, all slopes rise to the core of the centre to define its importance.

This concept requires corrugated sheet metal with IBR profile.

Roof structure in the exhibition hall and multi purpose hall combines laminated timber beams supported by masonry columns. This combination distinguishes the two halls, which have double volume space, from the other workshops. Still, use of timber keeps a warm feeling within the space.

Timber structure is used for all roofs in the workshops, to give a warm feeling within a community centre. The scrap metal workshop is the only one with a steel structure.

### Materials

Gates, windows louvres and hand rails are made of steel and when most of the work, as mentioned, can be done by local workers at the scrap metal workshop.

The outside walls are rough plastered painted with exposed brickwork for columns and benches.

Internal walls are plastered and painted.

## Solar Heating

In order to reduce electricity costs for water heating, solar systems will be allocated in high consumption facilities. Usage of solar systems will also serve an educational purpose.

### Assumptions

- Solar systems serve for showers and workshop sinks (toilet sinks don't need hot water).
- Costs - reduce electricity heating consumption by 80%.
- System's pay back period is between two and three years.

### Technical Database

- Normal system for sinks usage contains 200l tank and two panels.
- Panel angle to the north should be 30 degrees.
- Water tank should be higher than panels.
- Plumbing to be installed into masonry wall.

## Allocation of Solar Systems

### 1. MultiPurpose Hall

Consumption - two showers and one sink

Showers - 30l pp x 10p/day

Systems - 300l tank (with three panels) and 2--l tank (with two panels)

Installation - connecting to south pitch roof (5 degree) on metal sheets

### 2. Restaurant

Consumption - five sinks

System - 200l tank (with two panels)

Installation - on toilet's concrete roof.

### 3. Artist's Workshop and Ceramic Workshop

Consumption - five sinks

System - 200l tank (with two panels)

Installation - on concrete roof for demonstration purposes.

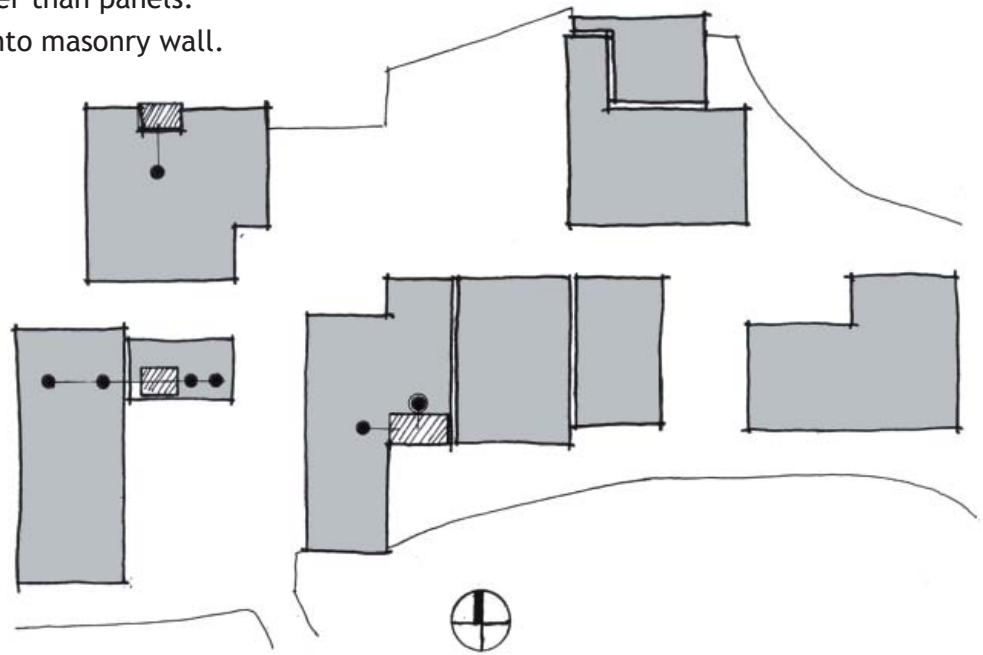
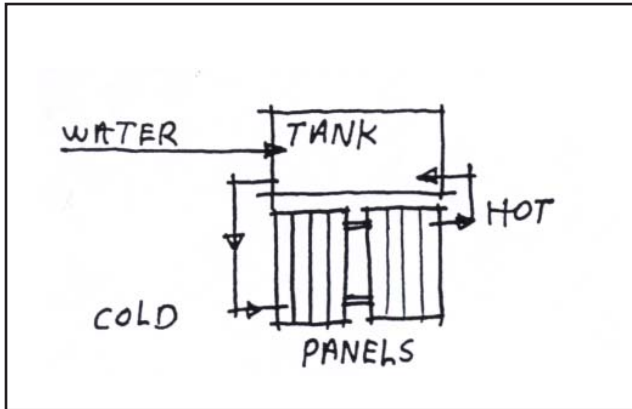
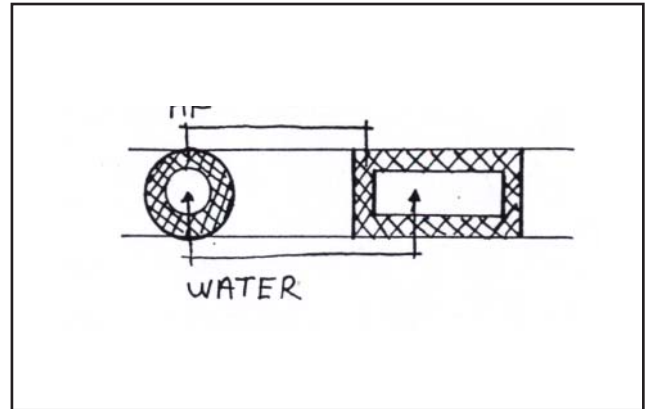


Figure 125

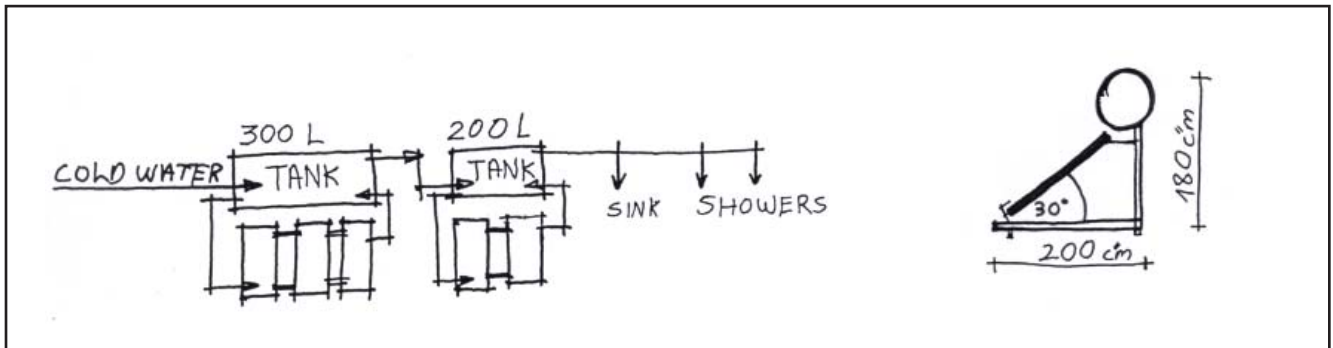
Allocation of solar systems.



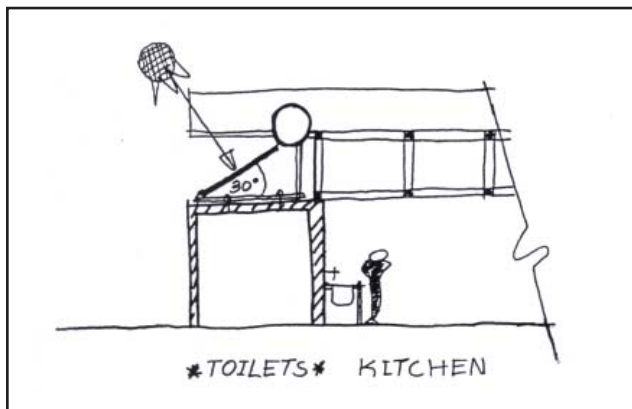
Solar scheme.



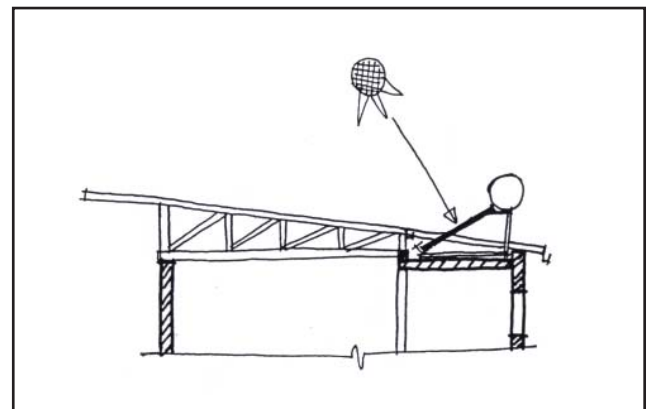
Solar tank. Cold water surrounded by Anti-freeze liquid.



Combined system for shower and sink.



Installation on the restaurant's roof.



Installation on the workshop's southern roof.

Figure 126  
Solar systems.

## Rainwater Harvesting

In order to increase economic water usage, water tanks, for rain harvesting, will be allocated near main toilets. Since toilet usage is the major water consumption, it could save a major amount of maintenance expenses.

### Assumption

- \* Rainwater harvesting to be used only for toilets (not for drinking/sinks)
- \* Water tanks serves toilets' facilities which are connected to them for vegetation watering.
- \* Water tanks capacity should be enough to gather rainfall of three average days (10 rainy days per month).
- \* Water tanks lean on a stand, which raise the water to cistern level.

### Data

Annual average rainfall (Johannesburg) - 713 m<sup>3</sup>/m  
 Total summer rainfall (October - April): 654 m<sup>3</sup>/m  
 Average monthly rainfall- 93m<sup>3</sup>/m  
 Average rainy days (1 m<sup>3</sup>/m +) per month: 10-15 days

## Allocation of Watertanks

### Exhibition hall

Roof surface - 290m<sup>2</sup>  
 Monthly water gathering from roof:  
 290m<sup>2</sup> x 93m<sup>3</sup>/m = 26.9 kilo litres  
 2.6 kilo litres per rainy day = Tank size  
 Consumption - 8 public toilets

### Scrap metal workshop

Roof surface - 200m<sup>2</sup>  
 Monthly water gathering from roof:  
 200m<sup>2</sup> x 93m<sup>3</sup>/m = 18.6 kilo litres  
 1.8 kilo litres per rainy day = Tank size  
 Consumption - washing area

### Multi purpose hall

Roof surface - 390m<sup>2</sup>  
 Monthly water gathering from roof:  
 390m<sup>2</sup> x 93m<sup>3</sup>/m = 36.2 kilo litres  
 3.6 cubic water per rainy day = Tank size  
 Consumption - 4 toilets + vegetation watering

### Environmental centre

Roof surface - 250m<sup>2</sup>  
 Monthly water gathering from roof:  
 250m<sup>2</sup> x 93m<sup>3</sup>/m = 23.2 kilo litres  
 2.3 cubic water per rainy day = Tank size  
 Consumption - 4 toilets + vegetation watering

### Demonstration flat roof

Roof surface - 60m<sup>2</sup>  
 Monthly water gathering from roof:  
 60m<sup>2</sup> x 93m<sup>3</sup>/m = 5.5 kilo litres  
 0.5 cubic water per rainy day = tank size  
 Consumption - education water tests + vegetation watering

## Restaurant

Roof surface - 250m<sup>2</sup>

Monthly water gathering from roof:

250m<sup>2</sup> x 93mm = 23.2 kilo litres

2.3 kilo litres per rainy day = Tank size

Consumption - 4 toilets + washing

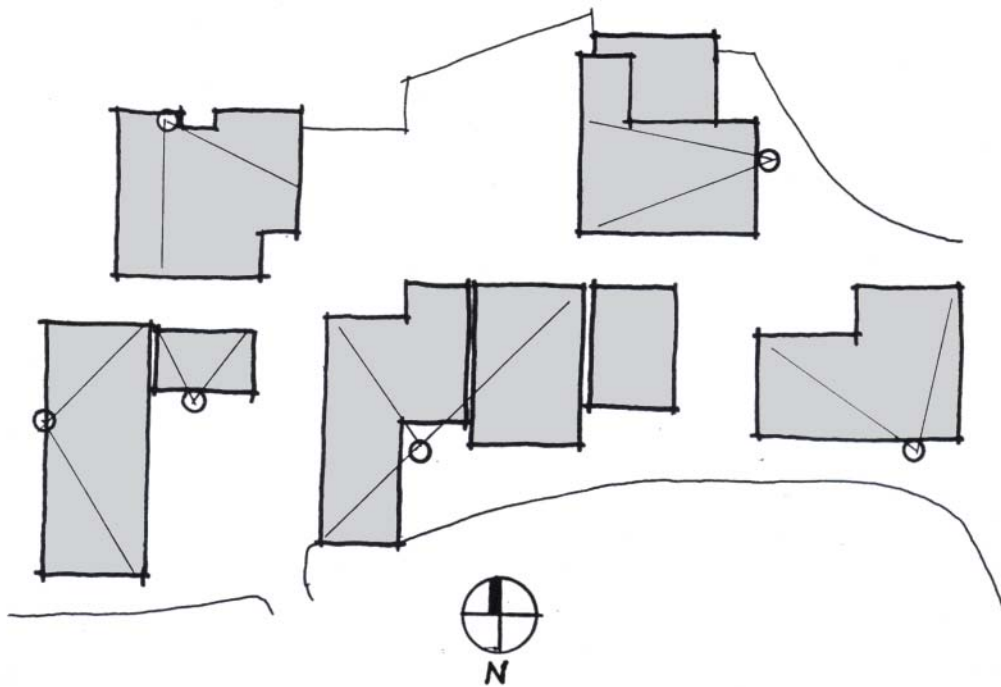
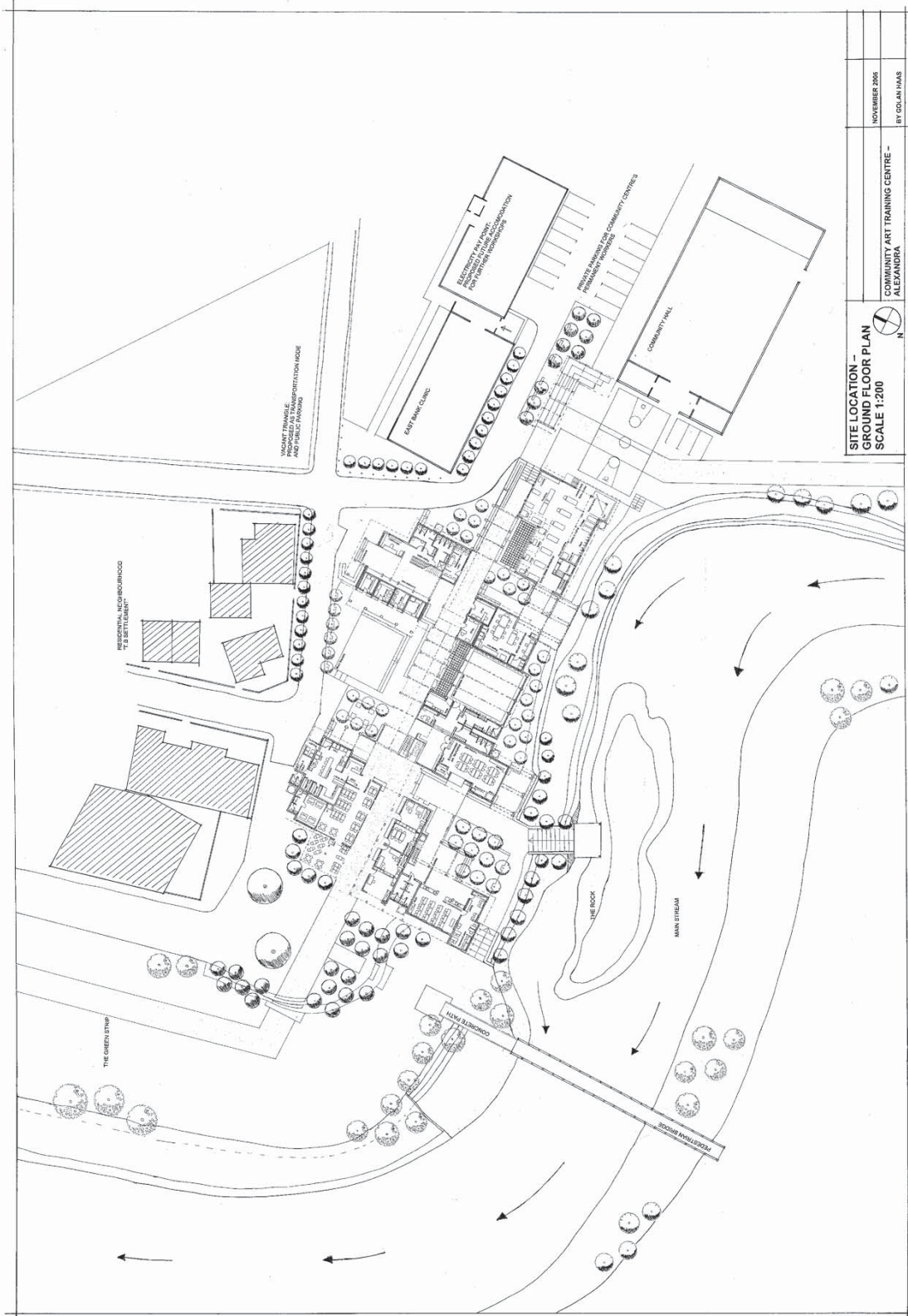
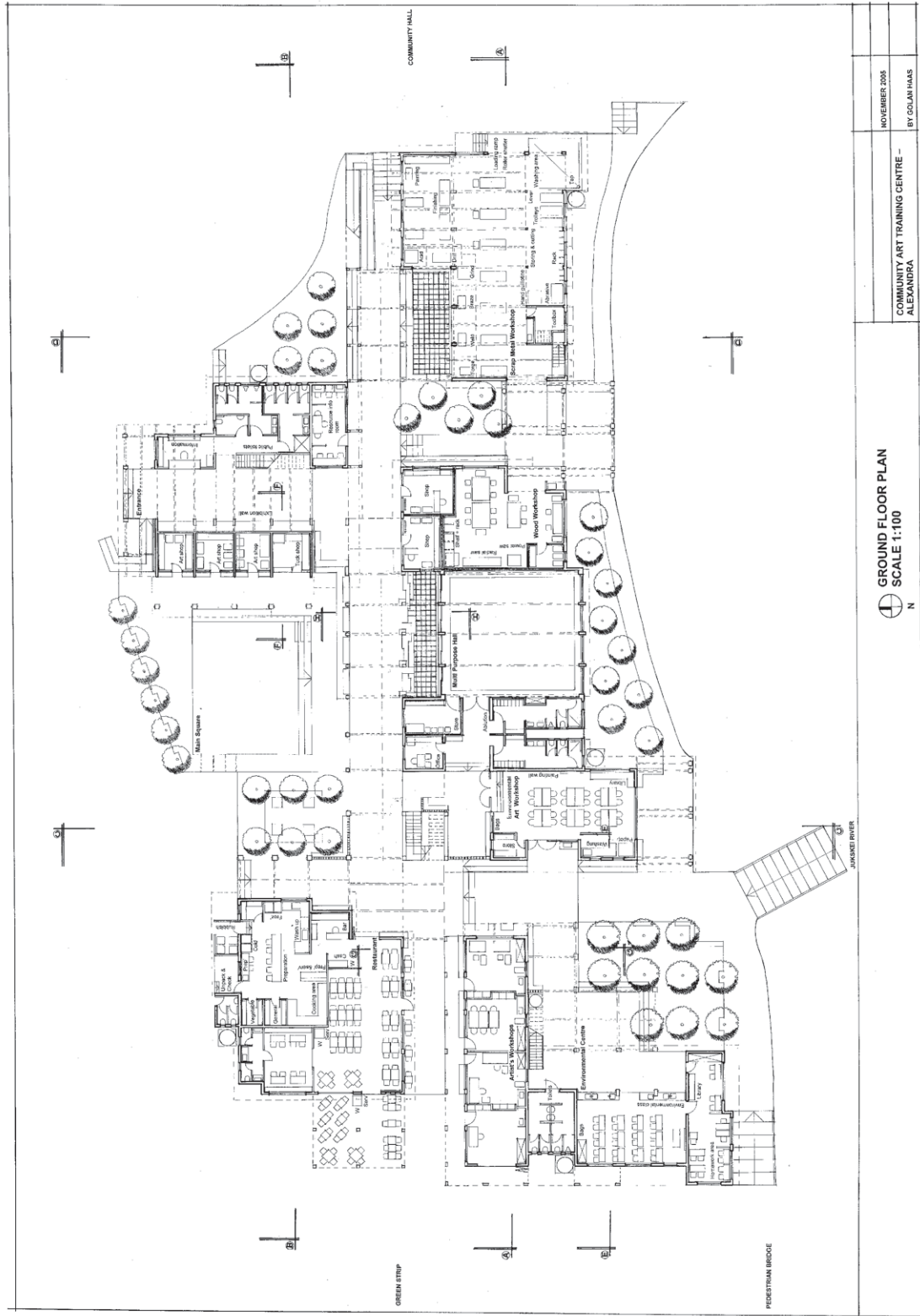


Figure 127

Allocation of water tanks in relation to roof slope.



SITE LOCATION – GROUND FLOOR PLAN SCALE 1:200		NOVEMBER 2005	
COMMUNITY ART TRAINING CENTRE – ALEXANDRIA		BY EOLAN HAAS	

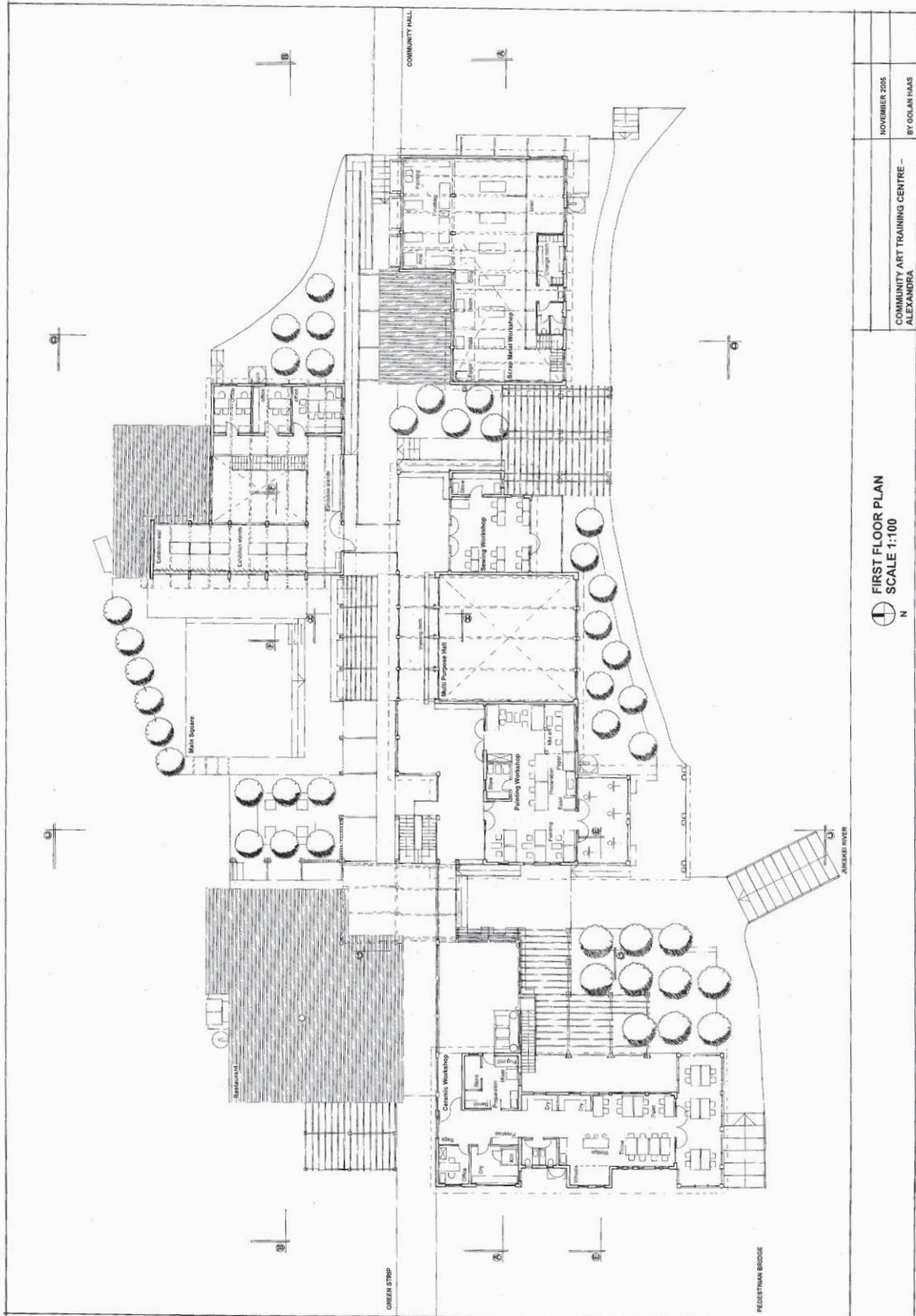


GROUND FLOOR PLAN  
SCALE 1:100



COMMUNITY ART TRAINING CENTRE –  
ALEXANDRA

NOVEMBER 2008  
BY GOLAN HAAS



FIRST FLOOR PLAN  
SCALE 1:100  
N

NOVEMBER 2005
BY OCLAN HAAS
COMMUNITY ART TRAINING CENTRE - ALEXANDRIA













## Financial Strategy

### 1. Calculation of design parameters

Site area	
Gross construction area m <sup>2</sup>	2,828
Coverage allowed	45%
Ground floor area m <sup>2</sup>	1,270
First floor area m <sup>2</sup>	205
Total paved area m <sup>2</sup>	1,020
Green Strip area m <sup>2</sup>	1,500
External parking m <sup>2</sup>	250

### 2. Estimated current building costs

Description	Total construction area of building - m <sup>2</sup>	Cost per m <sup>2</sup>	Total
Ground floor + first floor (Sum of ground floor area and first floor area)	1,475	R 4,200	R 6,195,000
Passage area	525	R 120	R 63,000
Landscape area (Gross construction area less Ground floor area less Total paved area)	538	R 70	R 37,660
Paved area	1,020	R 160	R 163,200
External parking (1 row x 15 bays)	250	R 120	R 30,000
<b>Building cost at start of construction</b>			<b>R 6,488,860</b>

#### ADD: Escalation

**R 483,394**

	Escalation	Cumulative
Pre contract escalation for 6 months period @ 0.5% p/m comp	R 194,666	
Building cost at start of construction		R 6,683,526
Construction escalation for 12 months period @ 0.6% p/m comp adjusted by Draw Down factor of 0.6	R 288,728	R 6,972,254
<b>Estimated total escalated building costs (start costs+ adjusted escalation)</b>		<b>R 6,972,254</b>

#### Add: Professional fees

**R 906,393**

	Per Item	Cumulative
<b>Professional fees @ 13% of total escalated building costs</b>		R 906,393

#### Add: Sundry fees

**R 64,000**

	Per Item	Cumulative
Legal fees	R 25,000	
Rates & Taxes @ 2,000 p/m	R 24,000	
Plan approval fees	R 15,000	R 64,000

<b>Total cost excluding land and cost of capital</b>	<b>R 7,942,647</b>
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<b>Add: Land related costs</b>	<b>R 454,200</b>
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	Per Item	Total
Land cost @ R150 per m <sup>2</sup>	R 150	R 424,200
Rezoning of 2 plots	R 0	R 0
River edge stabilization (100m) - N/C	R 0	R 0
Landscape development of Green Strip @ R20 Per m <sup>2</sup>	R 20	R 30,000

<b>Total costs before cost of capital</b>	<b>R 8,396,847</b>
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<b>Add: Cost of capital</b>	<b>R 396,138</b>
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	Item	Cumulative
Cost of capital for construction period @ 11% p/a - Land	R 46,662	R 46,662
Cost of capital for construction period of 12 m @ 11% p/a including Draw Down allowance factor of 0.4 - Construction	R 349,476	R 396,138

<b>Total project cost</b>	<b>R 8,792,986</b>
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## INTERNET SOURCES:

Alexandra Renewal Project: Urban Redevelopment Initiative.

<http://www.alexandra.co.za>

Learn To Earn: Skills Training and Job Creation Organisation.

<http://www.learn to earn.org.za>

## PERSONAL CONNECTIONS:

Jho Manana. CHAIRMAN: Alexandra Chamber Of Commerce. February/March 2005.

Neels Letter. Director for infrastructure. ARP - REGION 7. April 2005.

Galit Cohen, Fumane Phatedi. "MA'AFRICA TIKUN". January/March/August 2005.

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Golan Haas